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Motorola hopes to take major DP share

by Dave Madden

MOTOROLA will take a major share of the UK data processing market in 1984. That is the confident prediction of Noel Voice, UK marketing manager of Motorola Information Systems (MIS), the group formed by Motorola last autumn out of its Codex data communications business and the office automation line acquired with Four-Phase Systems.

Voice says that the key to success and survival in information technology in the rest of the decade will be the convergence of data communications and processing. Voice insists that though Motorola still has to educate the market that it is not only a mobile radio on semiconductor company, it is peculiarly well placed to take advantage of the changes in the market.

"The industry is becoming communications, not applications, driven," he says. He adds that companies which ignore this "will not count" — in the super league there will be IBM, AT&T and Motorola."

Another encouragement for Motorola, according to Voice, is the proliferation of the Unix operating system on 68000-based machines.

"I've never seen anything like it — I get four approaches a week from Unix software companies that want to do a deal — without Unix or Pick you'll be dead," Voice says.



VOICE . . . "The industry is becoming communications driven."

He describes the interest in Unix from major corporations as "phenomenal". "Organisations like British Telecom and BP are making commitments to standardise on Unix. If I was with ICL, I'd be looking for another job."

Voice says that Motorola will release a Unix "front-end" and database management system for the office environment this year.

This year will also see Motorola introduce Convergent Technologies kit as the 6000 family — a top-end 600 system, which will be based on Convergent's Megaraid, and a bottom-end system 100, which is the Ngen workstation.

Voice claims that if anyone is

sure of products from Convergent, it is Motorola. Motorola is a major supplier to Convergent.

First up from Motorola Information Systems in the UK this year is the Series 5000 office automation system. In effect this is an upgrade of the company's Series 4000 Four-Phase machine.

There are two models in the series. System 700 comes with 1/2 Mbytes of main memory, up to 640 Mbytes of disc storage, and supports up to 64 devices, including 32 FasTrac terminals.

System 800 processor has a cache memory and offers twice the power of the 700.

Motorola 1983 results on page 14.

Software grant delay opens door to American take-over

by John Kavanagh

DELAYS to a £16,800 government grant for a project aimed at bringing UK university software to market have opened the way for an American organisation to take over the project — and 40% of the income.

Research Corporation, which is setting up a software venture and opening a UK office, is inviting UK universities to submit their packages for inclusion in its new software catalogue.

Research Corp is a non-profit-making body with a \$50 million endowment and royalty income of \$10 million a year. It provides patenting, licensing and marketing services for universities' inventions.

and already has close links with many UK researchers.

The first software catalogue due out soon, Research will sell and support the products and take 40% of the revenues.

Meanwhile the UK's National Computing Centre and the Department of Trade and Industry are still haggling over a £16,800 grant to back a survey of the university software available. A similar sum has already been promised by the NCC and the British Technology Group.

NCC director David Fairbairn says: "We wanted to do the survey, but at least someone's going ahead."

Last November Fairbairn told the department there was "a very important task to be done". Applying for the grant, he wrote: "An opportunity will be missed if an activity is not now mounted to develop links between universities and industry."

ICL goes to police over damaging document

by John Riley

ICL has threatened to call in Scotland Yard to investigate a document that formed the basis of the article in the *Sunday Times* last December which wiped £20 million off its share value.

But although Scotland Yard confirmed that ICL has been in touch, it had not, at the weekend, begun any investigations, and was waiting for ICL to make contact again.

The article, sung by ICL, in a statement issued last week, ICL says the story "purported to reveal serious business problems facing

the company. As a result of extensive internal investigations, ICL has reason to believe that the document is a forgery.

"It is supported by the fact that not one of 20 senior executives claimed to be recipients ever received it."

A question mark hangs over the reasons for airing the affair in public again, especially at ICL's annual general meeting the weekend after the article had appeared.

This is speculation but the recent move may be aimed as much

internally as externally. The allegations suggesting that ICL's future looked fair from hell were made only days after ICL announced that it had doubled its profits and increased its turnover by 17% in 1983.

One of the most striking points in the *Sunday Times* article was that ICL's distributed mainframe DMS and its mainframe Beeline will be available at the end of the year.

In the past, ICL has made little allowance for contractors in its R&D effort and has struggled to keep the amount of software licenses available to its software de-

Alvey men plan to lead the world

by George Black

THE directors of the Alvey programme have announced plans to set world standards for artificial intelligence languages. They will spend £3.75 million of their total £350 million over the next five years on a project involving private industry, universities and government research laboratories.

A team of around 30 experts will be led by Mike Todd of GEC, with the academic side being co-ordinated by Cliff Pavelin of the Rutherford-Appleton Laboratory.

The work will centre on Edinburgh University's DEC-10 Prolog and Imperial College's Microprolog.

Britain has lagged behind the US in the development of Prolog, but is better placed to take on the challenge with Prolog, in which it is still the leader, despite the Japanese Fifth Generation effort. With Prolog, the UK is "in the driving seat," as Thomas puts it.

Thomas says the work will be spread over the full five-year term of the programme, though some results should start to emerge after three years. The artificial intelli-

gence languages and tools for further the realm of intelligent language-based systems and engineering.

The directors hope to support the real languages Pascal, Ada and Modula.

It has just spent £2 million hardware after buying Series 63s, but has just added to this five Series 63 machines, so that they can offer the same rich working environment that is available on DEC's Vax.

Chairman of the steering committee, David Thomas of the Alvey directorate, says: "Setting world standards is a pretty ambitious target, but we have to aim towards it. There is a fair amount of chaos in artificial intelligence at the moment and there are far too many dialects. Now there is an opportunity for Britain to lead in standardisation."

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The directors are keen to establish firm ties between academic products and software houses which can sell them, as has happened with Sussex University's Poplog and Systems Designers.

GEC will be closely involved in the project, and will be keen to see its hands on tools to run on its new



BALDWIN . . . The problem is no longer mere ignorance.

THOMAS . . . "The

HP slams education but promises 700 jobs

by Dave Madden

HEWLETT-PACKARD has announced further investment in the UK, with the promise of another 700 jobs at its Scottish telecommunications plant by 1987.

Peter Tanner, director of BTG's technology transfer division, says:

"It takes years to bring together and it is a must have as company. We humans would be better off if they were any information he had."

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BTG's ethics are challenged

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EEC is set to settle its IBM quarrel

by Keith Holder

THE European Commission will reach a negotiated settlement to its nine-year-old anti-trust battle with IBM by early April.

John Ferry, head of the European Commission's restrictive practices directorate, said last week that the whole issue would be resolved in the next nine weeks, and that it could be wrapped up even sooner.

The charges against IBM are that it refuses to release technical interface information about new products until it makes first deliveries, that it bundles memory component into its processors and that it fails to make the latest software developments available to users of plug compatible equipment.

The Commission holds that these practices illegally restrict the trade of other companies.

Earlier this year BASF's Rolf Brüllinger said that if the case against IBM was dropped, European manufacturers would have to bring fresh charges, or face complete domination of the European market by IBM.

Brüllinger's fear, shared by two US plug compatible makers Amdahl and National Advanced Systems, is that IBM could influence European standards in its favour.

IBM held that the Commission's proposals mean that it acted as a prosecutor, jury and judge in the case but the European court ruled that the case could proceed and it was heard in February, 1982.

say, establish a *de facto* standard by sheer weight of numbers due to the company's market dominance.

Richard Clarke, Memorex' UK director of legal affairs, criticises the companies which had not joined Amdahl and Memorex in the original complaint.

He complains: "If they are so concerned with the issue, why didn't they come forward earlier and join us in presenting the case to the EEC?"

He says that even if IBM agrees to comply with requests to disclose product details earlier, other manufacturers in Europe will still have to be on their guard.

The EEC's restrictive practices directorate spent over five years preparing its case against IBM. This was followed by a series of challenges by IBM.

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US MINICOMPUTER manufacturer Wang last week joined the Department of Trade and Industry's Office of the Future project.

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Singapore... membership of the IDPM is improving.

IDPM spreads word in Asia

by John Kavanagh
UK COMPUTING qualifications will be promoted across south-east Asia — one of the world's fastest-growing computing markets — next month when Ted Cluff, secretary-general of the Institute of Data Processing Management (IDPM) visits the area.

"I'd like to encourage formal recognition of IDPM qualifications by the Malaysian government," Cluff says. "Malaysia is where the IDPM's real strength lies in the Far East. We have over 300 students and 50 professional members there. Around 310 took our examinations in December."

In Hong Kong, Cluff will encourage a new IDPM branch with 42 full members and 30 students. He says there is a "modest presence" in Singapore, but in the last month, membership there has improved, with nearly 90 students from one school joining and over 150 from another college showing interest in the exams.

"Almost half the IDPM's 2,500 student members are in the Far East and around 8% of the 5,000 full members."

Other strong overseas branches are in Sri Lanka, Nigeria, Greece and Malta. "No one knows how these things start," Cluff says. "It just seems to spread by word of mouth in the bush telegraph. IDPM people pop up all over the place."

Lifeboat resurfaces after four months

SOFTWARE distributor Lifeboat Associates has emerged in the location of Marlborough, Wilts, four months after closing its doors in London.

Lifeboat's new distribution agreement with Roundhill Computer Systems of Marlborough is the first sign of life since Lifeboat ceased trading in October with the promise of re-organisation and a new look.

Roundhill has been picked to distribute the Lifeboat products, based on the Unix language C, because of its involvement with both Com and Lifeboat. Roundhill director Tim Frost has close links with

Ex-Storage men buy abandoned project

by Keith Holder

US PLUG compatible manufacturer Storage Technology has sold the virtual storage system project it had abandoned to four former employees, who are starting up a company to carry on work on the system.

Storage Technology will have a minority financial interest in the new firm, Data & Expert Systems International (DESI), together with Borg Warner.

Although neither investor has any automatic rights to manufacture or market DESI products,

Brian Molloy, Storage's UK managing director, says: "If it can produce a useful product, we would be interested in talking about a deal for distributorship."

The move comes after Storage Technology abandoned its mainframe development programme, and is seen as part of a wider plan by the company to streamline, supporting only its plug compatible disc storage and optical disc devices.

The latter is known to have soaked up a lot of the company's financial resources, and is only just beginning to be shipped to reference sites in the US. The company's 80 series of IBM 3380 compatible disc systems has also been slow to get off the ground, though Molloy says he is confident that it has a healthy future.

This has fuelled speculation that Storage is pruning its activities and trying to cut costs while its mainframe products need support.

He indicates that DESI will reduce itself to the role of minor investor in DESI. Storage is able to keep tabs on any developments without having to report publicly results of its

financial interest.

Barry White, head of DESI's former head of virtual storage systems development for Storage Technology, says that future will closely follow the off concept, but not necessarily the software or hardware previously developed.

He indicates that DESI

will build its own control disc and storage units, unlike Storage's plans to use Magnuson IBM compatible hardware, though it would still offer IBM compatibility.

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Passmore quits DEC

by John Kavanagh

DIGITAL Equipment's UK marketing manager, Bill Passmore, left the company last Friday following former UK managing director Darryl Barbe to Sun Microsystems.

Barbe left two months ago, soon after microcomputer business manager Lawrie Cattell. Paul Musson, who replaced Cattell, has moved up again to take Passmore's job as number two man in the UK. He will work with new managing director Geoff Shingles.

Passmore's departure comes after a year in which DEC lost not only Barbe but also eight top executives in the US. DEC has just promoted nine long-serving staff to vice-presidents to fill the gaps.

The nine US promotions involve sales, manufacturing, peripherals, software and education.

Customers are showing little concern over the UK moves. "I see DEC as an entity," says Cliff Evans, deputy chairman of the users' association. "Personalities make a bit of difference, but people move around a lot in this business. From my talks with users, this does not seem to be a big concern."

Evans, who has both a need and historical ties with the UK, is encouraged by the new IDPM branch with 42 full members and 30 students.

He says there is a "modest presence" in Singapore, but in the last month, membership there has improved, with nearly 90 students from one school joining and over 150 from another college showing interest in the exams.

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Motorola sets BT lines free

by Donald Kennett

BRITISH Telecom's top 100 customers will be able to make efficient use of their Megastream and Kilostream leased digital telecommunications circuits for the first time this summer, according to Motorola Information Systems, which is launching the device it claims will provide the necessary facilities.

The device, called the Ultramax, is a high-performance multiplexer that can handle a mixture of digital voice, data and video channels with an aggregate data rate of up to 10 Mbit/s per-second.

It can also be connected to a mixture of transmission circuits — such as local area networks, private optical and microwave links, and British Telecom's recently introduced Megastream and Kilostream digital leased lines — and will re-synchronise transmission to the different timing requirements of each.

It is made in the US by Avant

Communications, and Motorola has worldwide distribution rights, exclusive in some places including the UK.

According to sales manager John Bleach, it is often impossible to connect one Megastream or Kilostream circuit directly to another to form a multipoint network because, although the timing for each is controlled from the same master clock, the pulses get out of phase with each other because they arrive by different routes.

The only solution, Bleach says, is to buffer the data and re-synchronise it. And the only types of equipment that do this are large and expensive up-to-date PABXs and re-synchronising multiplexers such as the Ultramax.

But rival products only handle trunk speeds of up to two Mbit/s per-second (BPS) compared with the Ultramax's 10Mbps, he adds, and PABXs waste bandwidth by giving all data channels slower than 64Kbps a full 64Kbps channel each.

By taking the lead, both companies hope to pre-empt IBM and other companies developing and marketing re-synchronising transmission equipment.

Broker A. G. Becker is to place shares in Wordnet under rule 163 of the Stock Exchange, which allows brokers to deal in unquoted stock — Sinclair Research and Intelligence UK shares are handled in this way.

The agreement gives both companies transfer rights, so that they can exchange the electronic components, but it also has a growing microcomputer and peripheral distribution arm which handles Epsom products.

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Norbain joins USM

THE Norbain Electronics Group of Reading is coming to the Unlisted Securities Market by way of a placing through prolific high-tech broker Simon and Coates.

Smart cards, which are cards containing a microprocessor and memory, are increasingly used in the retail, banking and security industries. There is a growing demand from these industries that standard cards now used everywhere.

"Our major banks, for example, prefer two sources rather than one, and the establishment of international standards called for by us is an essential condition for the development of this technology," says a Bull spokesman.

The fact that the name Filetab is used as part of Filetab Support Services is no hindrance, nor should it cause any problems for either party, says Morris.

"It's a question of protecting our property rights to the name," explains NCC contractor manager John Morris. "At present, if someone else were to use the name, we could sue for passing-off, but it would be up to us to prove that our name and reputation were being damaged. If the names are already registered, it gives us a head start, as the burden of proof then shifts to the other party."

One of the most common problems is proving that the name is not a commonly used term with a general meaning, rather than a specific product. "Since we've strung together two terms common in computing, File and Tab, the Registrar may want further proof of our reputation, to prove that people recognise the product by that name."

The fact that the name Filetab is used as part of Filetab Support Services is no hindrance, nor should it cause any problems for either party, says Morris.

"It goes some way to helping our case, as it proves that the product is widely known under that name," he adds.

The NCC has been distributing questionnaires to people in the computer industry as part of preparation for its case.

Bull and Philips read agreement on smart cards

by John Riley

RIVAL smart card manufacturers Bull and Philips Datasystems week signed a bilateral agreement to standardise the technology in the cards' production.

Both the French owned Bull and the Dutch Philips Datasystems plan to standardise three years ago. It will use programmable Microprocessors and try to standardise the technology recognisable by the International Standardisation Organisation as a world standard. Both companies will still carry industrially and commercially.

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1984

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Air Call hopes for a mobile world

by Donald Kennett

THE beginnings of a universal, low-cost mobile text communication service have been launched by the radiopaging company Air Call.

The service, which Air Call calls Visual Paging or Pocket Telex, uses Motorola receivers roughly the size of a cigarette packet. The receivers have a 12-character liquid crystal display and a 160-character memory.

Messages can be accepted into the system from any kind of computer or terminal with a modem or from the telex network, and the system prompts for the correct format.

Deputy managing director Maurice Henchey says: "The telex network continues to expand at more than 30% a year and we expect to give a boost to the growth."

Henchey says the company has invested half a million pounds in the first phase, which covers the London area from Borehamwood to Croydon and Dartford to Hounslow. It aims to make major extensions throughout the UK this year. The investment includes a 10,000 line public telephone exchange bought from British Telecom, which enables each paging unit to have its own telephone number.

It has also developed software for the system, to run on Digital Equipment Vaxes, Rain Black



HENCHY... "Telex network continues to expand at more than 30% a year."

Boxes, Tandberg intelligent terminals and specialised processors for telephone answering and radiopaging services made by StarTel and BBL in the US.

It has already sold systems products and software developed to the UK service to the Swedish PTT and a paging service in Canada, and it will be able to use them in its operations through

COMPUTASTARS

DP's Olympics are about to start

COMPUTASTARS is here again. And what a competition. Bigger and better than ever, Computastars is now open to even the most unfit DP manager. Fear not if you find it difficult to lift a double gin and tonic, it is for you that Computastars has been brought into existence.

For alongside the ever-popular DP Olympics there will be a knockout darts competition for teams of three to five players.

But the yet is more. Not only is the ever-popular Computastars back, but a scaled-down version with three men (or women) teams puts in an appearance for the first time. Aimed at the rank amateur puller, the new competition promises to be one of the highlights of Computastars '84.

And in an attempt to find the fastest operator or programmer in the UK, Computaspiret bursts upon the scene. Two races, of 60 and 100 metres, will be held at each heat, the winners going through to the UK final. Although

Computastars calls for athletic skills on track and field, in general sports and in the gymnasium. Computer Weekly will be awarding gold, silver and bronze medals, plus individual and team trophies.

Clear? If you have any queries, don't phone us, phone Gordon Cairns on 01-688 6690.

See you at Barnsley on May 5.

The rules of the competition

1. Teams will consist of not less than three and not more than five competitors.

2. Each team, other than a Veterans team, is required to nominate a team captain who will compete for the individual title as well as being a member of the team.

3. The winning teams from each regional heat will be invited to participate in the national final. Additionally, the highest scoring Veterans and the highest scoring Small Unit team in each regional heat will be invited to participate in the national final.

4. The winning three men's and women's teams, together with the highest scoring Veterans and Small Unit teams in the UK, will be invited to participate in the European final.

5. In each event, in each round, three team captains are required to nominate the nominated team

champion and two other team members nominated by the team captain.

6. The team captain must be one of the five nominated team competitors and the organisers will only recognise the team captain's selection for events.

7. Should the nominated team champion be unable to compete after the first event in a heat, then the team captain must nominate a substitute from the remaining team members. The substitute must continue to compete as the team champion in all remaining events. Once substituted the original team champion may not participate during his heat events. To win the individual title a team captain must have the authority to represent the team.

8. At all meetings and on all points, the decision of the organisers is final and not subject to dispute.

If you have a query on Computastars, please don't contact us at Computer Weekly. Get in touch with the organisers at 1178 High Street, Croydon CR9. Telephone 01-688 6690.

MSC fund home learning kit

A "HOW to service your microprocessor kit" is to be developed with funding from the Manpower Services Commission. The kit will be part of an open learning programme to help micro servicing engineers update their skills.

It is being set up by the Micro Electronics Educational Development Centre (MEDC), in Paisley, Scotland.

Through its Open Tech Unit (OTU) the MSC will put £140,000 into the three year project to develop the programme. This will be matched by £140,000 from the Scottish Education Authority. The programme will consist of six modules, and people will be able to choose any number of these according to the skills they need.

The microprocessor kit will be used by people in their own homes to learn about fault finding. It is intended that the kit could later be used for fault finding on the job. This will ensure the learning is integrated with the person's job.

Simon Perryman of the OTU says: "A number of options are

being looked at and a decision is expected in March. The kit may be based on an adapted home computer, and one of the possibilities is an adapted BBC micro."

A spokesman for Zilog confirmed that NEC would be granted a licence to manufacture legitimate copies of Zilog's Z80 microprocessor and "some other as yet unspecified products". All charges against NEC have been completely dropped.

It was NEC's manufacture of Z80 copies which prompted Zilog to take the matter to the US International Trade Commission (ITC) last June and seek \$30 million in damages for patent infringement, from the Japanese company.

The ITC started an investigation, but this has been closed as a result of the settlement.

Ironically, the existence of NEC's Z80 copies on the market did much to boost sales of the Zilog product, as it provided micro-makers with a second source of supply.

Perryman says there is tremendous interest from big companies wanting to set up training schemes. British Leyland is spending £1 million over the next five years to set up 120 learning centres with computers and videos to update the skills of the Austin Rover workforce in robotics, engineering, and diagnostics.

OTU made a grant of £35,000 towards the centres.

MICRO NEWS

Exxon and Zilog settle with NEC

by Keith Holder
CALIFORNIAN chip manufacturer Zilog and its parent Exxon have ended their patent dispute with Nippon Electric Company (NEC) with an out-of-court settlement.

A spokesman for Zilog confirmed that NEC would be granted a licence to manufacture legitimate copies of Zilog's Z80 microprocessor and "some other as yet unspecified products". All charges against NEC have been completely dropped.

It was NEC's manufacture of Z80 copies which prompted Zilog to take the matter to the US International Trade Commission (ITC) last June and seek \$30 million in damages for patent infringement, from the Japanese company.

The ITC started an investigation, but this has been closed as a result of the settlement.

Ironically, the existence of NEC's Z80 copies on the market did much to boost sales of the Zilog product, as it provided micro-makers with a second source of supply.

Perryman says there is tremendous interest from big companies wanting to set up training schemes. British Leyland is spending £1 million over the next five years to set up 120 learning centres with computers and videos to update the skills of the Austin Rover workforce in robotics, engineering, and diagnostics.

OTU made a grant of £35,000 towards the centres.



by Keith Holder
INTEL UK systems sales manager. "A part from our past relationship with Rapid Recall, we could see that they were already familiar with dealing with the customer base we are trying to hit," he adds.

Rapid Recall also made a "substantial investment" in setting up operations to handle sales and support.

Haverson says it was this, rather than any strategic planning that led to the delay between the US and UK launches. "We wanted to make sure we were completely prepared and ready to go on day one."

The products have been available in the US for six months, and have produced encouraging sales, says Peter Haverson, Intel UK divisional director.

Both systems are aimed at the lucrative multi-user, distributed systems market. According to Haverson, this market should be worth about \$600 million by next year. Intel is aiming for a 10% slice.

The choice of Rapid Recall as distributor was made to help target the systems at the right potential user base, says Steve Spill,

includes an SQL compatible relational database (iDB), spreadsheet, word processing, electronic mail and calendar facilities.

It is based on Xenix, the Microsoft version of Unix, and allows users to download and work on files, from the mainframe.

iTPS is a similar multi-tasking system designed to be an applications generator for transaction-based systems incorporating a relational database.

Spill denies that the systems might bring Intel into competition with IBM's Popcorn multi-user system, when it is launched. "Our success will come from penetrating the OEM dealer market with these products. This is an area IBM has not really touched, so we won't find ourselves competing."

Haverson says Intel's internal demand for the much-wanted 8088 chip will not affect supplies to its outside customers as the volumes will be "relatively small".

Intel bids for a fresh identity

by Keith Holder
INTEL has brought its iDIS and iTPS commercial database information systems to Britain, strengthening its bid to become a recognised systems manufacturer.

The two products will be distributed by Rapid Recall, which has been selling Intel kit for 10 years, and is now its No 1 distributor in Europe.

The products have been available in the US for six months, and have produced encouraging sales, says Peter Haverson, Intel UK divisional director.

Both systems are aimed at the lucrative multi-user, distributed systems market. According to Haverson, this market should be worth about \$600 million by next year. Intel is aiming for a 10% slice.

The systems offer users the ability to link up workstations or micros forming a "data bus" between them which may then be connected to any mainframe, via a data pipeline, says Haverson.

iDIS is a combination of hardware based on the 8088 processor and software and in-



Eligibility for entry

THOSE eligible to take part in Computastars fall into the following categories:

1. Only personnel who are fully costed to data processing activities.

2. Only personnel who were employed by their present company prior to February 1, 1984, can represent that team.

3. Teams wishing to enter the Small Units section (men only) must meet the following conditions:

(a) The unit or company unit must employ less than 25 eligible people (men or women and including contract staff), within a 25-mile radius of the location of the team entering.

(b) The team will compete in the main competition and must nominate a team champion who will compete for the individual title.

4. Companies may enter as many teams as they wish, subject to eligibility. A competitor may represent only one team and, having been nominated for that team, may not represent any other team in the competition during the current year.

5. Teams wishing to enter the Veterans section (men only) must wholly consist of members who are 35 years old or over.

over on February 1, 1984. Teams in this section are not eligible to nominate a team champion, and event selection will be any three members from the team.

6. Teams wishing to enter the Small Units section (men only) must meet the following conditions:

(a) The unit or company unit must employ less than 25 eligible people (men or women and including contract staff), within a 25-mile radius of the location of the team entering.

(b) The team will compete in the main competition and must nominate a team champion who will compete for the individual title.

7. Teams not entering the Small Units section may consist of members of the company drawn from any location.

8. Contract staff may be used subject to the qualifying conditions.

9. Once a team entry has been accepted there will be no refund of the entry fee.



IBM-PC sales head for 20,000 in UK

by John Riley and

Keith Holder

IBM Personal Computer sales failed to take off in Germany last year. Present reports say IBM sold only 7,000 PCs instead of the 16,000 it had aimed for.

But the UK is showing strong sales of the PC, mainly into large organisations.

Estimates of the number of machines installed are as high as 9,000, and predictions on this year's sales top 20,000, according to IBM's dealer base.

These figures do not include machines that IBM itself sells into large organisations. These could be as much as 30% to the sales figures.

The verdict of dealers like Hoskyns, Geisco and Byte Shop is that the IBM-PC will remain firmly attached to the business systems role, which will give it an enviable stability in the market-place.

There were signs that the IBM-PC market was picking up in Germany late last year, particularly because, with problems at Osborne, Victor, Apple and David, buyers were turning to IBM for safety.

IBM aims to sell 60,000 PCs in

IBM Germany's marketing organisation recently. It has been divided into two units: the new markets unit, which is responsible for personal computers, videotex, telecommunications, robots, software and biomedical products; and the information systems unit, responsible for traditional markets and support.

Among problems reportedly facing IBM were low margins on the PC. Dealers pushed them only when specifically asked for them by customers, and the big distributors were slow to take on PCs because they feared losing out on the dumb terminal replacement market.

You need the assurance of a supplier with an established client list of over 6,000 companies, a large number of which are in the 'Times Top 1000'. An enviable record with leading city institutions, banks, accounting firms and insurance companies. An organisation with experience across a wide range of industries, from petroleum and engineering to manufacturing and retailing.

You need to be offered a choice from the most advanced 16BIT computers available, IBMpc/Sirius/Selko Series 8600/Apricot/Wang backed up by an effective after sales service, a research and technical centre, training, distribution and software, all co-ordinated by our systems division.

To know you are installing the right computer, you need a systems division, not only with our experience, but also with the ability to call on some of the best software expertise in the country.

One result of the German shortfall was the restructuring of Germany in 1984.

In addition to our highly successful software packages for financial planning (Micro Modeler), information retrieval, business graphics, communications and insurance broking, we supply a large range of industry standard programs and word-processing packages, to ensure that the right system is selected for your business.

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COMPANY NEWS

Amdahl profit up 10 times at \$43 million

AMDALH saw a remarkable improvement in its financial performance in 1983. Profit rose 10 times to \$43.2 million on turnover up 70% to \$777.6 million. Increased volume sales more than offset processor price cuts. In the fourth quarter profit was up from \$74,000 to \$15.7 million, and turnover ahead 55% at \$225 million.

President John Lewis expects further price reductions in 1984.

Harris boost

HARRIS has posted an 18% increase in profits for its second quarter ended December 1983, and says orders were up 30% because of a surge in demand for semiconductor products. Profit was up from \$15.6 million to \$18.4 million on turnover up from \$433.8 million to \$472.2 million. The figures include the results of Lantic Business Systems, which was merged into Harris in the same quarter.

Looking for home

MA BELL'S orphans are looking for a home in London. The regional telephone companies formed in the break-up of American Telephone and Telegraph are seeking separate listings on the London Stock Exchange. Pacific Telesis and US West are the front runners.

Great debut

CML Microsystems has made a glamorous debut on the Unlisted Securities Market. Its shares managed a 58p premium over a striking price of 130p on the first day of dealings. At 185p the shares are on a prospective price earnings multiple of over 30, and value the company at £16 million — twice its capitalization at the original tender price of 95p.

Ring for tickets

BARCLAYS Bank high technology group is sponsoring Barclays Technuart, a high tech exhibition at the National Exhibition Centre, Birmingham. The show runs from February 21-25, and we have 50 complimentary tickets to give away. Ring 01-661 8541.

Buoyant Cray

A STRONG last quarter boosted net profits at Cray Research by 36% to \$26 million on turnover up 5% to \$170 million for year ended December 1983. Chairman John Rohlwagen says the company met its target to install 16 new systems in 1983 — six of them were the new models, three Cray X-MPs and three Cray 1/16s. Profits margin on these later models are much higher than on the old Cray machines, which were cut in price in 1982.

Micro takeover

EQUIPU, Bristol-based supplier of office equipment accessories and spare parts, has moved into microcomputer distribution with the takeover of DataLink Microcomputer Systems. Equipment inherits IBM-PC and Apple dealerships.

Cable puts its eggs in one colony



CABLE and Wireless's wish to take control of Hong Kong Telephone Company has been granted. It now holds about 53% of the company's equity in a move that makes C&W alarmingly dependent on Hong Kong.

Cable and Wireless bought 35% of Hong Kong Telephone (Telco) for £143 million last March from troubled Hong Kong Land. Its latest bid was triggered when the group took a further 3.4% stake in the Li family, which has extensive interests in the territory. Under Hong Kong takeover rules any holding over 33% necessitates a full offer.

So far the 13% C&W needed to buy to take a controlling interest has cost some £60 million. Buying 100% would cost C&W about £300 million.

C&W finance director Ernest Potter has said that the company would not be distraught if it failed to get the lot, but leaving Telco with a substantial minority could cause up trouble. The companies have disagreed in the past as to

how to carve up the colony's international traffic revenues.

Some brokers had considered C&W's offer to be on the mean side and had advised shareholders against accepting it. Certainly the company has benefited from the downturn on Wall Street which took 50 points off the Hong Kong Stock Exchange. For its first stake C&W paid the equivalent of 11 times prospective earnings.

Its current offer of HK\$46 (24.14) represents 13 times earnings, and a modest premium of 12% over the price at which Telco was trading before the bid.

The deal gives Cable and Wireless virtual control of Hong Kong's telecommunications system. C&W already provides Hong Kong with its local and international phone links through an 80% owned subsidiary Cable and Wireless (Hong Kong). Telco operates the domestic system covering Kowloon and the new Territories.

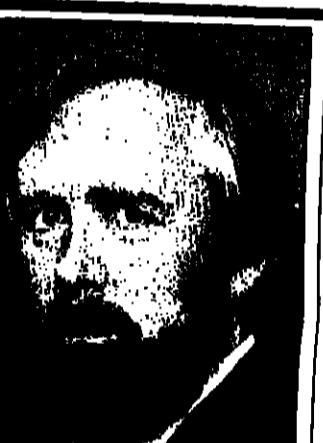
The move is part of C&W chairman Eric Sharp's grand plan to dominate the telecoms market in

the Far East, and China in particular. Sharp has said repeatedly that he sees China as one of the most important potential markets.

C&W has already made inroads into the Chinese mainland. In September 1982 it began a joint venture to provide telecoms facilities to China's fledgling oil industry. And last November it joined with provisional authorities to develop a telephone system for Shenzhen, a special economic zone on China's side of the Hong Kong border. C&W holds 49% of the venture, Shenda Telephone.

SHARP... "China one of the most important markets."

Scan Data bought in £2.2m deal



BALDWIN... "Right for all."

the right thing for all concerned. I've been pretty impressed with Audiotronics plans, and they have a lot of clout in the City".

Baldwin reveals that Audiotronics is putting up nine of its own shares for every two in Scan. Audiotronics is trading at 22p, so that values Scan shares at 99p. The bid is fully underwritten by cash, and Schroeder Wag, Audiotronics' advisor, is offering to cash a cash option of 21p.

Scan shares had a hard time in 1983. Placed by Williams de Broe at 125p, they have been as high as 197p. But last month they had tumbled to 75p low before being taken up 15% as speculation about a bid surfaced.

Baldwin concedes: "It would have taken some time for Scan to get its glamour back on the USM", and Audiotronics offers the company faster growth than would have been possible over the long haul.

Baldwin says the decision to join up with Audiotronics has not been easy but he is confident that "it is

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Robertson promises to honour Almarc's maintenance contracts and says that people who have been trying in vain to buy Almarc kit will not have to wait much longer.

Cold-shoulder for US plans

by Philip Hunter

ACORN has shown that a UK company can sell micro hardware in the US. Now Micro Planning Software of Bristol is determined to do the same with software, though the company's US expansion plans have met with zero enthusiasm from UK investors.

"We found nobody was interested," says managing director Glyn Nixon. "People told us high tech marketing in the US was such an expensive operation that it was a money sink. We were talking

about spending at least £500,000."

Enthusiasm has not been so damp in New York, however, where three financiers are interested in putting up \$1 million.

Nixon is in New York this week, and hopes to conclude a deal with one of the financiers, either to set up a US subsidiary, or to establish a distribution network.

Nixon says the company already has a token presence in the US, with an agent selling its Microplanner project management package.

Company News is compiled by Dave Madden

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SOFTWARE FILE**National puts on a new program**

ACTRESS Frances de la Tour will be one of the first names to be read by a new system at the National Theatre this week. She is taking the title role of the theatre's new production of *Saint Joan* with a cast which will be among the first paying of the custom-written software. The program was written by Interactive Computer Systems (ICS) of Sidcup in Kent, and runs on a Data General MV4000 minicomputer.

APL proposal

THE draft proposal for a standard for the APL language has been laid open for public comment from March to the end of June by the American National Standards Institute's information processing systems committee.

Softword comes

SOFTWORD Systems of Connecticut, author of the Wang-like word processing package for the IBM-PC Multimate, will set up in the UK next month. The two year old \$15 million firm will open a distribution and support centre in the London area.



Home suite suits go-it-alone PME

by Claire Gooding

WANG software house PME is to go it alone with a home-grown suite of accounting software after years of selling US-based software. Since 1981, PME has been the UK distributor for The Office Manager (TOM), a parameterised set of accounting modules for the Wang 2200.

Now PME has developed its own software and is planning to concentrate on Wang's larger VS machine. PME's Complete Accounting System, while it has its roots in TOM Software, has been mainly coded by PME, and enhanced to the degree that it is a new product for the VS market.

PME is still fulfilling its contractual obligations to TOM, despite a declaration last year by TOM president, Howard Bing, that TOM had unilaterally terminated the PME contract. PME is still sending regular reports and royalties to TOM, although joint man-

aging director Naomi Langford Wood says that PME has not heard from TOM for some time.

Like many UK distributors of products which originate in the US, PME has put in a great deal of time and effort supporting TOM software for the UK. Since no help came from TOM, it made its own enhancements.

According to PME director Mike Powell, not one enhancement or update was received, and requests for technical support were

fruitless. "There was an enormous amount of detail to change," says Powell, "not to mention basic enhancements users needed such as daily rather than monthly postings."

PME went ahead and extended the software on its own account, adding a range of applications such as property management, travel agents' packages, property development accounting and govern-

mental commitment accounting.

There were also problems adapting to the UK account conventions, which PME had, and then added multi-user facilities, box graphics, support extra terminals and integrate with other software.

The decision to expand on its own was, according to Powell, perfectly logical business decision to expand rather than a deliberate move away from TOM or

2200.

"The VS is a Cobol machine and effectively the software is machine independent. We are providing a VS service because that is where the market is, and since Wang has demand for Unix, it opens up the possibility of an even larger market," he asserts.

In the long term, PME plus

Transfer The Complete Accounting System to other manufacturers such as IBM.

HAMILTON

FOR RENT or SALE

MINI COMPUTERS

Dec Systems
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PROFILE

The man who delivered two body blows to industry giant



PETER HERMON, the newly-appointed UK managing director of Tandem Computers, is remembered for giving IBM two massive body blows in the 1970s. The repercussions of those blows, which helped to get IBM plug-compatible and third party maintenance companies off the ground, still reverberate around the UK computer industry.

As management services director and head of British Airways computer operations he first switched the maintenance of his IBM 370/158-based installation away from IBM to the Australian-based third party company, Data Processing Computer Equipment (DPEC). Then two years later, in 1978, he left IBM altogether by

John Riley

upgrading his machines with plug-compatible Amdahl mainframes.

"Taking maintenance to DPEC saved us 30%, and in an organisation as large as British Airways that is a lot of money," he says.

The decision to break away from IBM was bold, and it effectively launched Amdahl in the UK, as well as saving British Airways "millions" of pounds.

What isn't so well known is that Gil Jones, IBM's president of world trade, later wrote to Hermon thanking him, because he had pointed IBM in the right direction for the future.

In 1982 Hermon was made managing director of British Airways European operations, and left last summer after re-organisation in preparation for privatisation. He did consultancy work for Saatchi and Saatchi for a while before being headhunted into Tandem, the US manufacturer of fault tolerant

minicomputer systems.

He is enthusiastic about Tandem. "It is not cluttered up with traditional and outmoded practices and has an open style of working. For example, at Tandem's terminal factory in Austin you don't see an assembly line. Every worker makes the whole product and signs it — that ensures built-in quality assurance.

"Being in a large organisation is like trying to swim in treacle, whereas now most of my time is spent swimming in water."

Although he comes from the public sector, Hermon has much to offer Tandem, for British Airways' software was marketed throughout the world and won Hermon a Queen's Award for Export Achievement in 1982.

Ten years earlier, in 1972, he won a Queen's Award for British Airways' communications network called Boadicea.

"Our software sales paid for our hardware," he says.

"Our prime focus was online systems and distributed databases. We had the first real time system in the UK. Now a lot of companies are beginning to use real time systems. That is the area Tandem excels in."

Another important area for Tandem is the public sector. According to Hermon, about one-fifth of its UK sales are currently in that sector, and Hermon will push hard there.

Tandem is a rapidly growing company, and has doubled its turnover each year in the UK since 1978. One of Hermon's tasks will be to help Tandem bridge the gap between a small entrepreneurial company to a more mature one."

But he realises that there must be a delicate balance: "We're

going to have to put more structure, more procedures and guidelines than in the past, but that doesn't mean red tape," he says. "You need enough cement between the bricks, and that takes judgment and skill."

How does he view running a company of 160 staff after being responsible for 3,000 people?

"It's not all that different," he says. "The kind of control needed for large and small companies differ only by the number of noughts.

"Inventories, cash flow, margins, long-term planning, etc, are all common to each — there are the same people problems: communications, problems and interface problems."

Ironically, in the early 1970s, Hermon championed IBM. The 1972 merger of BOAC and BEA caused severe problems in the IT departments, because BEA had IBM machines and BEA ran Unix. Hermon won the resulting battle and British Airways invested in two IBM 370 machines.

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All about protocols

Fred Jennings, of software and systems house Data Logic, has prepared a series of reports on networks - called JENSheets - and the eighth of these is on communications protocols. Due to space restrictions we are printing it in five instalments, of which this is the fourth.

The following full-duplex protocols are the most well known:

Digital Equipment's Digital Data Communications Message Protocol (DDCMP) is the line protocol used for DECNET and is an unusual full-duplex protocol because it is control character orientated;

IBM's Synchronous Data Link Control (SDLC) is a bit-orientated protocol and has a similar frame format to HDLC. SDLC is the line protocol used for IBM's System Network Architecture (SNA);

the International Standard Organisation's (ISO) High-Level Data Link Control (HDLC) is a bit-orientated protocol and is directly equivalent to the American National Standards Institute's (Ans) Advanced Data Communications Control Procedures (ADCCP). A subset of HDLC is used as the line protocol for CCITT X.25.

Full-duplex protocols require a full duplex point-to-point link. They all use a form of piggy-back operation for acknowledgements (ACKs), and ACKs to correctly received (incoming) data blocks are transmitted as a field in outgoing data blocks.

When there is no data to send, then acknowledgements are sent separately in non-data blocks. To avoid any ambiguity as to which data blocks are being acknowledged,

the frame structure for the High-Level Data Link Control (HDLC) protocol is specified in British Standard 5397 (ISO 3309, ECMA 40) documents as Table 1.

This is the LONG frame format and there is also a SHORT frame format which is identical except that it does not have an information field.

Error-checking on frames is achieved by the use of a frame-checking sequence (FCS) which is generated using the CCITT CRC-16 polynomial. The CCITT CRC-16 is a different polynomial to the IBM CRC-16 used in binary synchronous operation.

For HDLC operation, a cyclic redundancy check is a division performed by both the transmitting and receiving devices using the numeric binary value of the Address field, Control field and Information field (when present) as the dividend which is divided by a 16-bit constant (CCITT CRC-16).

The quotient is discarded and the remainder is used as the frame-checking sequence (FCS) or CRC character. It should now be realised that one of the advantages of HDLC is that all transmission (data and non-data) uses frames and are therefore protected by a CRC check.

HDLC is a bit-orientated protocol and two bit patterns are used for basic transmission control purposes: a bit pattern of 0111110 is called a FLAG and is used to mark the beginning and end of each frame; a bit pattern of from seven to 15 consecutive ones is an ABORT function and is used by the transmitting device to abort a frame which it has started to transmit.

Transparency of the data in the address, control and information fields is achieved by a technique which is known as "zero bit insertion/deletion" (bit stuffing/instuffing). Zero bit insertion is performed at the transmitting end and zero bit deletion is performed at the receiving end. The transmitting end inserts an extra nought into the transmit serial stream if it detects a six-bit serial pattern of 011111 because the next two serial bits could be 10 (a pseudo flag) or 11 (a pseudo abort function). The receiving end performs the reverse operation and deletes the final nought on any received serial pattern of 0111110.

At the transmitting end, genuine FLAG and ABORT bit patterns bypass the zero bit insertion circuitry and are therefore uniquely identified at the receiving end. Zero bit insertion/deletion is a hardware feature of an HDLC Communications interface.

The bit-oriented standard HDLC/SDLC protocols and the character-oriented IBM BSC protocols differ in their hardware interface requirements as shown by Table 2.

This general provides different hardware interfaces for HDLC and IBM operations. However, Data Logic has an interface capable of either operating (HP intelligent

ledged, each transmitted data block has a send sequence count of three bits (counts 0-7). Some full-duplex protocols provide an extended send sequence count capability of seven bits (counts 0-127).

For each data block transmitted, the send sequence count is incremented. The count is circular and the next count after seven (or 127) is nought.

An acknowledgement consists of transmitting a receive sequence count which is the expected send sequence count of the next data block to be received. All data blocks received up to that number are acknowledged.

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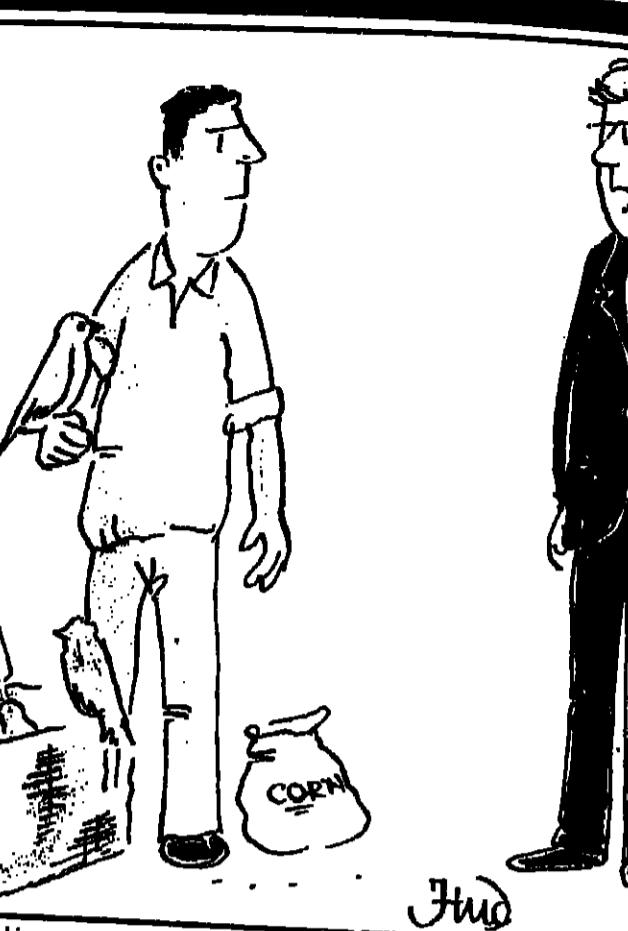
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"I told you to look at packet-switching not packet-carrying!"

COMPANY PROFILE

Dedication is still the Wordplex way

Many think dedicated word processors are outdated. Wordplex, as Nuala Moran discovered, thinks not, despite introducing its new micro

WHEN Wordplex introduced its micro at the end of January it made it quite clear this did not mean it was abandoning word processors. There are probably some commentators who think it would be better off if it did.

The argument goes something like this: a word processor is merely a small computer, distinguished by the fact that its software suits it for one function. But users have no need to be restricted in this way.

Wordplex also disagrees with the pundits' view that it is only the large companies with centralised大型 computers with specific applications, a computer terminal for batch and interactive processing work, an electronic mail service and teletext," says Winder.

"Lots of small users such as solicitors are still going for word processors. This is because one of the main clerical tasks in a solicitor's office is producing documentation. So, they want to invest in the most efficient method."

Wordplex does not see it in the same way. It says there is a world

strategy for office automation, had Wordplex also realised that it had

to increase the functions of the word processor.

With office automation secretaries don't just need word processors. You could argue that they

also need telex, access to Pretel and other public databases, a personal computer for specific applications, a computer terminal for batch and interactive processing work, an electronic mail service and teletext," says Winder.

"What we have done is put all these functions on one unit. In other words what we are offering is a multifunction workstation. But it still has word processing as its main use."

One of the most obvious advantages of a multifunctional word processor is that data can be transmitted in different forms. For

one thing it is possible to justify the extra cost. But Wordplex has realised it cannot depend on these features for its continued existence.

As a result it has designed an office automation strategy, which is where its business micro comes in. The micro is an IBM-compatible machine, made by Corona Data Systems. This is the first time Wordplex has marketed a machine not made at its own factories.

There are three micros on offer, a standard personal machine with 128 Kbytes of RAM, which is internally identical to the personal computer, but has a 10Mbyte Winchester disk drive; and a transportable model with the same specification as the PC but with its screen shrunk to nine inches and weighing only 20lbs.

Wordplex's bid to become a supplier of complete systems for office automation will be rounded out with an additional offering, expected soon, of a file/resources network connector. System 8000 will allow micros, word processors and peripherals to be used as a distributed system and to connect to a local area network.

Micros don't have these features to tailor them especially for word processing. This is particularly true of function keys, which receive commands, send responses and may participate in error recovery actions; and combined stations, which send both commands and responses and also receive both commands and responses and are equally responsible for link level error recovery.

Another aspect of the Wordplex philosophy helps users to wean themselves gently off straight typewriters and into the office automation age. Multilink is a communications facility which links electronic typewriters to word processors. This means that up to 15 typewriters can be used to feed data into a central word processor where it can be edited

to another.

"And", says Winder, "you've got to remember that word processing is an expensive function. Having a purpose designed word processor means saving training time and it also means greater productivity."

Wordplex also disagrees with the pundits' view that it is only the large companies with centralised大型 computers with specific applications, a computer terminal for batch and interactive processing work, an electronic mail service and teletext," says Winder.

"The advantage for companies beginning to invest in office automation is that they can build up by replacing typewriters with workstations as and when the work load requires or funds are available," claims Winder.

In the same way, Wordplex thinks that most of the initial market for its micro will be with existing word processor customers building up automated offices.

Does the dedicated word processor still have a place in this scheme of things? "I stand by the assertion that if the main task is word processing, the best product is a word processor," Winder asserts.

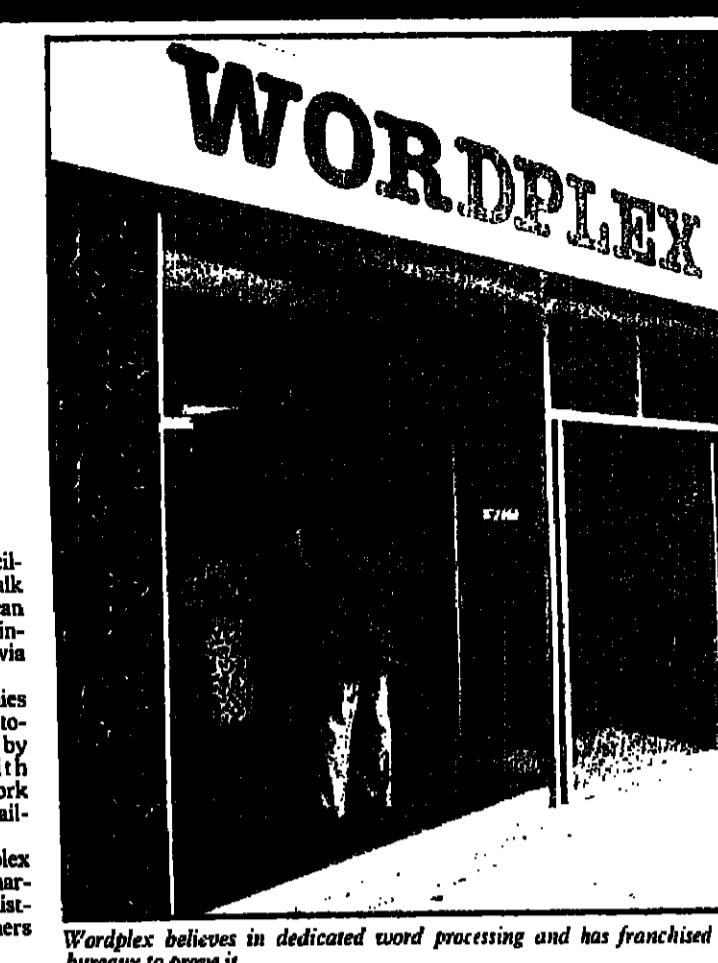
He backs this up by the fact that 30% of Wordplex's 1983 turnover of £19.4 million was in sales of the 80-2, its bottom of the range word processor.

The 80-2 can be upgraded on site to the 80-3 and 90-4. The 80-3 has dual ground working through the Wordplex Gemini operating system. This means, for example, that word processing can carry on while the machine receives telexes. The 80-4 has built-in Winchester storage of 10 or 16 Mbytes and it can be upgraded to the Wordplex 80-4 cluster. In this configuration two additional workstations share its database.

Each model is based on the same VDU and keyboard, only the function keys change.

Wordplex has over 5,700 units installed in the UK. And it also boasts some large clients such as ICI, Marks and Spencer, Reckitt and Colman, Unilever, British Steel and the National Westminster Bank.

Office automation is a growth market and word processor companies ought to know more about what goes on in offices than many companies now entering the market. The market may be demanding more than just word processing. Wordplex is aware of this and is trying to provide a business solution rather than just an efficient way of doing the typing.



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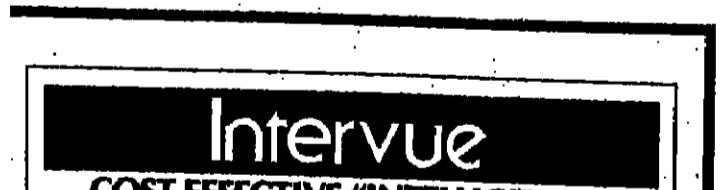
■ A new STC company, STC Technology, has been established with Simon Willdey (above) previously with the Plessey company, as managing director. The new company groups Standard Telecommunication Laboratories (STL), STC Idec (the telecommunications development center and software systems house) and STC's automation unit and new product development unit. The four elements employ 1,500 people, chiefly engineers and scientists. Dr Willdey has worked for the past 13 years at Plessey, where he was managing director of Plessey Controls, managing director of Plessey Telecommunications Research and, most recently, director of engineering and digital switching.

■ Hugh Parker, a former director of McKinsey and Co, has been appointed a non-executive director of DPC Holdings, the independent computer maintenance company which went public in July 1983. Parker worked with McKinsey and Co for 32 years, 25 of them in the UK. He founded the company's UK operation, and from 1959 to 1974 was its managing director. He retired as a director of McKinsey and Co in 1983.

■ General DataComm has appointed Joe Lloyd (above) former ICI senior communications expert, as sales and marketing director for the UK. He has also held senior positions with Ferranti, GTE and Rusal Milgo.



■ Brian Carter (left) and Barry Aikens (right) have been appointed directors of Memorex UK. Carter continues to have responsibility for all aspects of Memorex's customer service and Aikens is responsible for personnel and training. Aikens has been with Memorex for four years. The new directors join John Clarke, managing director, John Lambert, finance director, and Edward Picken as executive directors of Memorex UK.



■ Nigel Banister

has become managing director of NMW Computers, and David Fachir, formerly marketing director, has succeeded Banister as marketing director.

■ Ray Kite has joined Data & Control Equipment of Aylesbury as international marketing executive. He has been a territory sales manager at Case and most recently worked in Dubai with Emirates Telecommunications Corporation.

■ Alex Reid has joined the board of Acorn Computer Group as a non-executive director. Until recently Dr Reid was a director of British Telecom. From 1981 to 1983, he was chief executive of British Telecom Spectrum, which includes BT, electronic mail, radio paging, and radio phone services. Previously he was director of Presetel and director of business systems.

■ Micro-Marketing (Electronics) has appointed John Hewitt as sales and marketing co-ordinator. He joins from Semiconductor Specialists, where he was senior product manager.

■ John Farrand has been appointed president of Atari and president and chief operating officer of Atari Products Company. Other Atari Products Company appointments include: Donald Kingborough, executive vice-president of sales; David Ruckert, executive vice-president of marketing; Paul Malloy, executive vice-president of operations/product development; Marcellin E Hoff, executive vice-president of research and product development; and Steve Calfee, vice-president of entertainment software. Charles Paul has been named president of Atari's coin-operated games unit.

■ Paradyne has appointed Sergio Rocco as international sales manager. He comes from Transac-Alcatel, where he was area manager for the Mediterranean countries.

■ Keith Elliott

joins Elan Computers from What Micro? magazine, and Steve Groves joins Maitel where he had responsibilities for after-sales service in Europe, the Middle East and Africa. Elliott takes on the job of commissioning and producing original software for the Elan Enterprise 64 and 128 home computers.

■ Tony Monk has been appointed to the new post of education director by the Circle group. Monk, previously a lecturer with Will-Dem, brings 10 years of CICS/VIS experience to his new role, which complements Circle's consultancy and software operations.

■ Massstor Systems International has appointed Alan Speller (above) as systems manager, responsible for pre and post sales software support including installation, hand-over and customer training. Prior to joining Scan-Optics he spent two years

with a large OCR company. Christopher Maiton (above) has been appointed UK sales manager. He has spent four years with Computer Automation as area sales manager covering the south and south west areas.

■ Roger Whitehead

chief consultant with Office Futures is to present a revised version of Pergamon Infotech's tutorial 'Managing the Automated Office'. The new programme for the three-day event, London from February 21-23 emphasises the importance of existing organisational structures and procedures in planning for the use of automated office systems. Fee is £425 + VAT. Further details from Pergamon Infotech, Maidenhead (0628) 6228 3910.

■ Information Futures is running a two-day tutorial followed by a two-day international conference from February 21-24, at the Cafe

Royal, London. The tutorial will examine the key technical aspects of Unix of concern to experienced computing staff meeting Unix for the first time. It is designed for experienced systems and programming staff who have used other operating systems and who wish to gain a technical insight into Unix. Further information from Diana Pitcher, Information Futures 07535 58811.

■ Datavolve Education's ANS

bol programming workshop takes

place at its London Education

Centre from February 20 to Febr

uary 9, and the cost is £790,

each of which may be accessed by an easy-to-use prompt menu.

■ Intervue

has sufficient memory to provide the user with up to 100 pages

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each of which may be accessed by an easy-to-use prompt menu.

■ Intervue

provides the user with terminal compatibility to any CPU

with RS232C serial ports, enabling the user to emulate a particular type

of terminal on various CPUs.

■ Intervue

has, as an added bonus, an auxiliary port which may be configured

to support devices such as printers or even a second processor.

■ Intervue

For further details contact

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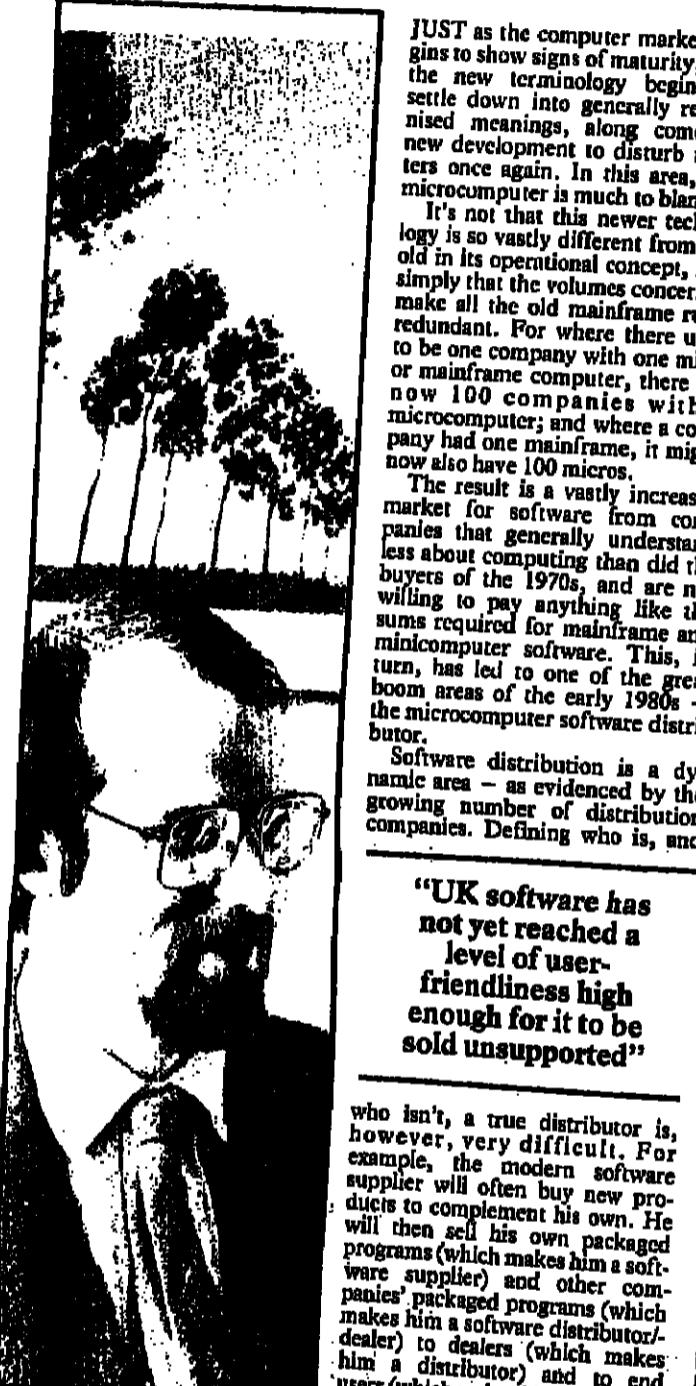
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SOFTWARE MONTH

Distributors have cashed in on 1980s micro boom

MICROS AND COMPANIES WITH MICROS HAVE MULTIPLIED TENFOLD SINCE THE 1970S. MICRO SOFTWARE DISTRIBUTORS NOW ABOUT



DUNLOP... "Lifeboat had the chance."

JUST as the computer market begins to show signs of maturity, and the new terminology begins to settle down into generally recognised meanings, along comes a new development to disturb matters once again. In this area, the microcomputer is much to blame.

It's not that this newer technology is so vastly different from the old. Its operational concept, it is simply that the volumes concerned make all the old mainframe rules redundant. For where there used to be one company with one mini- or mainframe computer, there are now 100 companies with a microcomputer; and where a company had one mainframe, it might now also have 100 micros.

The result is a vastly increased market for software from companies that generally understand less about computing than did the buyers of the 1970s, and are not willing to pay anything like the sums required for mainframe and minicomputer software. This, in turn, has led to one of the great boom areas of the early 1980s — the microcomputer software distributor.

Software distribution is a dynamic area — as evidenced by the growing number of distribution companies. Defining who is, and

"UK software has not yet reached a level of user-friendliness high enough for it to be sold unsupported"

who isn't, a true distributor is, however, very difficult. For example, the modern software supplier will often buy new products to complement his own. He will then sell his own packaged programs (which makes him a software supplier) and other companies' packaged programs (which makes him a software distributor-dealer) to dealers (which makes him a distributor) and to end users (which makes him a dealer).

One company that almost fits this role is Peachtree Software International, undoubtedly one of the

more dynamic of today's software companies — but note that Peachtree considers itself to be a software developer, and not a software distributor.

Richard Moore, Peachtree's UK general manager, believes that the software market would benefit from a greater number of specialist dealers concentrating expertise on selected applications.

"Some software," he explains, "such as Peachtree or Lotus 1-2-3 can be sold simply as a commodity, and in this area the distributors have an important role.

"More complicated packages

—

The volume of micros makes all the old mainframe rules redundant

like accountancy ledgers can be more successfully sold as part of a total support package. This is usually done through dealers who have chosen to specialize in supplying total business solutions to users."

This view is similar to that of Mike McDonald of The Bristol Software Factory. "The market in the UK," he claims, "is at an advanced stage of development with a high level of user awareness; that is, users expect and require support in terms of training and queries. The software itself has not yet reached a level of user-friendliness high enough for it to be sold unsupported."

"But the software distributor is merely acting as a middle man and will not be able to afford the technical support effort required. Software without support may be a reasonable approach where it is sold through a supermarket, but today's user would generally prefer to have the support of the local dealer."

In theory, we could say that the distributor provides software (and perhaps technical support) to a network of dealers, who in turn provide packaged solutions to the end user. But perhaps the only practical method is to look at the number of packages that the

Lifeboat was scuttled before it had a chance to sink of its own accord

products that they were selling. And anyway, the same packages were available from UK representatives of the originating software house at better prices!"

Peter Hewitt, the marketing manager for Britain's world acclaimed software house, Micro Focus, put the failure down to a lack of commitment from Lifeboat. "The key reason for having distributors in the software market," he explains, "is that they have the ability to cope with different machines and disc formats. Although Lifeboat had these facilities in the US, they did not have that ability in this country — and that is why they failed. Other companies that have gone to the trouble to make this investment are more successful."

But we should not be surprised by the disappearance of Lifeboat. Innovators rarely manage to stay at the forefront of their particular science. Dominic Dunlop, the technical manager of Unix specialist distributor Sphinx, sum-



It up thus: "In the late 1970s, Lifeboat, entering what was then virgin territory, had the chance to sweep the board. Sadly, while its prices were attractive, its support (or lack of it) and down market image were not. What's more, of the dozens of packages in its catalogue, few would have passed the kind of rigorous quality check that is required to ensure that software sold without support really works, and buys it."

"As so often happens, later entrants in the field look set to overtake the trail-blazers by recognising these mistakes and not making them again (where now is

SOFTWARE MONTH

The industry is changing and a battle is on for lower margins which some distributors see as unmitigated disaster

Opinion is divided on the price-cut battle

If one of Lifeboat's failings was to offer mainstream dealers sufficient margins, it begs the question that we are perhaps beginning to see the start of a software price war.

Since it is already happening in the hardware market, is it likely to repeat itself in the packaged software market? Many users look at the physical cost of a package (one disc, say £5), then look at the supplied cost (up to £1,000 plus) and feel that software is overpriced.

One thing is certain: the software market is changing, and will change even more rapidly during the next few years.

Even as this feature goes to press, a group of the major distributors are beginning to edge closer together. Does this mean the beginning of a Dallas oil-like software cartel?

Opinions on price wars are divided. "No," says Barry Neil of

"The problem is not getting business, but getting qualified staff. I would see a head-hunting war as much likelier"

MPI. "Yes," says Geoff Lynch of Xitan.

Mike McDonald of The Bristol Software Factory expands the former view: "There will not be a software price war in the same way as the hardware suppliers are battling it out. Margins on hardware are large for the OEMs, and there is leeway for price cutting as well as improvements in manufacturing technology contributing to a reduction of costs."

"Recent moves have been seen to change this to 45% and 18.1% respectively — which is very unhealthy as it leads to the dealers giving away their margins."

The main reasons for this are, firstly, a portion of the market is disappearing as hardware suppliers begin to take on software distribution (for example, Sanyo and ACT); secondly, there is an increasing number of other new entrants into the market (it would appear, for example, as if W. H. Smith now has ambitions in this direction); thirdly, another portion of the market is disappearing as software publishers, such as Ashton-Tate, start to sell direct; and finally, there is an increasing degree of competition and failures among

the dealer themselves."

Chris Base, national dealer manager of Midleton Distribution, believes that discounting exists, but says it is unhealthy to the industry. "The major problem in the market at the moment is dealers and retailers discounting products — the result of which is becoming only too apparent in the bankruptcy court."

"I feel that the recommended retail prices will remain about the same, and the discounters will gradually be forced out of the business — leaving the computer market to the more responsible companies."

"Clearly, both Sinclair and

Psion, the software house, are

looking for low price high volume."

It is quite likely that other software houses and manufacturers will have to consider either reducing their prices and bundling with the hardware to compete with Sinclair, or await the outcome of the Sinclair venture.

"Sinclair is primarily selling at this price by direct mail order, and we may well see software houses changing their emphasis more so to direct mail order in order to compete."

Lynch sees a price war coming from a different area: "At the distribution level it is already happening. An interesting phenomenon," he believes, "is the distribution of margin between the dealer and the distributor."

Typically, a distributor who gets 60% discount of the RRP (before production, import and duty costs) will be providing that product at 40% discount to the dealer. If one accepts the assumption that the 'hidden' costs are at least 5%, this means that the gross margins are 40% for the dealer, and 25% for the distributor.

"Recent moves have been seen

to change this to 45% and 18.1%

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SOFTWARE MONTH

Our survey shows software distribution really means microcomputer software

Micros open up specialised market

SOFTWARE distributors are a recent phenomenon spawned by the rapid growth and dissemination of the microcomputer. So dynamic is this market (distributors come and go almost with the regularity of the high street newsagent's computer magazine) that it is worth reflecting on what the future might hold.

Some distributors (like Geoff Lynch of Xian) feel that there are already too many distributors; others like Barry Neil of MPI feel that the market can support still more. But there is one characteristic of (almost) all the companies that took part in our survey of software distributors: software

required for the up-market hardware."

Even as it is, he continues: "I would like a hot dinner for every overseas user technical query I've received because the local dealer doesn't know or doesn't care."

increasingly fill the gap by making modern networks of existing mixed-vendor hardware."

But, as perhaps the exception to prove the rule, Allied Aims is an existing large systems software distributor about to enter the software jungle. Says Mike Connolly, sales and marketing director: "It is debatable whether we should really call ourselves a software producer or software broker."

Allied Aims is effectively the commercial arm of the Allied Breweries Management Services Company.

A market for mainframe distributors? "I don't think so," he comments. "It's the volume market that attracts distributors, and there promises to be no explosive growth in the mainframe market sector in the foreseeable future."

Another factor worth noting, he continues, "is the larger proportion of expert buyers in this market segment, and the longer decision cycle they involve" — none of which is attractive to the software distributor.

On a similar theme (the mass market), Dominic Dunlop, technical manager of Sphinx — specialist distributor of Unix — strikes a more optimistic note. "Mainframes, although a small market in themselves, can now run the Unix operating system popular on minicomputers and super-minis, making it easy for the distributor to offer the same package across a wider range of hardware — itself a particularly attractive proposition for the larger company with a wide existing range of hardware."

"What is often overlooked, however, is the need for communications software to unite such disparate systems. The traditional computer suppliers have solutions only for their own products — but the software distributor will in-

"I would like a hot dinner for every overseas user technical query I've received because the local dealer doesn't know or doesn't care"

distribution means microcomputer software distribution.

Our first question must therefore look at the possibility of mini and mainframe software distribution. Xian's Lynch thinks it may happen: "I feel that this market is embryonic even now, but it will become more relevant with the advent of the so-called super-minis." But he has strong reservations: "It will need dealers who sell minis and mainframes first — and I haven't seen much evidence of that yet."

Similar logic is expounded by Mike McDonald of the Bristol Software Factory. "I think not," he says, "because of the much higher level of technical support

"The mini and mainframe market can support software distributors — but only those acting as super dealers"

that we have tried and tested our selves.

The confusion between the terms "producer" and "broker" arises because Allied Aims will market both its own and third party software. "We are developing," he explains, "a minicomputer vehicle fleet package which can also be networked to remote locations from a central point. We took our ideas to the NCC and were subsequently given a sizeable grant through the Software Products Scheme."

One of Allied's third party products about to be adopted is "a relational database come artificial intelligence package, primarily aimed at mini and micro users to create applications quickly by the end user."

Research suggests a productivity improvement of between 300% and 500%, says Connolly.

A positive view comes from Ron Young, chairman of Systematics International. "Many people," he claims, "believe that the micro has killed off the mini and mainframe

been a somewhat specialised market. In addition to these scene-stealers, it should not be forgotten that many of the major hardware manufacturers have at least a toe in this market, including IBM, Hewlett-Packard, Tandy and Hitachi.

"This commitment to 16/32-bit processors will bring many opportunities to British software companies. In the past, companies like

flug flying a bit. "But the 16/32-bit market all intents and purposes is not for the richer pickings. The smaller companies now have an opportunity to attack this because, unlike their larger counterparts, they can quickly respond to new opportunities."

So long as there is a dynamic software market, there will be dynamic distribution market.

But there is one problem serious distributors must face: the increasing cost and problems concerned with after-sales support. MPI sees this as primarily a dealer problem.

"Any product which is sold dealer should be supported by dealer. That is the basic dealer discount structure. Fundamental problems with products should be reflected in the distributor. If this chain of command is not properly applied then the distributor will have increasing support problems. The dealer will lose his discounts — and his customers."

Secretly, however, many dealers and dealers claim the day's end-user is unreasonable. The problem is the microcomputer has not computing capacity from the main of the computer experts placed it in the hands of computer illiterates. This leads to what is sometimes called the "syndrome": the user experts pack the system, plug it in, use it without any further help.

Paul Rayner, the managing director of Great Northern Computer Services, tries to minimise the situation. "Not everyone needs after-sales support. As they don't need it, they shouldn't have to pay for it. But on the other hand, many people want and need considerable after-sales support. Few people would expect us to be the ones to pay for it."

The time of a good distributor is just as valuable as the time of a good dealer. The good dealer/distributor must therefore be prepared up to give the support — but the customer should expect to pay for it."

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BASE . . . "The average UK dealer can afford to hold large stocks and relies on the distributor to do so for him."

SOFTWARE MONTH

Where to find distributors

Software Month looks at 18 companies in a special survey of those who call themselves distributors

Software: Finar
Established: 1980
Turnover: £650,000

Hardware: Unix
Software: Uniplex
Established: 1982

Great Northern
Computer
Services Ltd
3-5 Suthavon Street
Witham
Essex CM8 1B1
Tel: 0376 519413
Leeds
LS18 4RJ
Tel: 0532 589980
Telex: 557061
Contact: Paul Rayner
No of packs: 10
Hardware: CP/M, CP/M-86, MS-
DOS
Software: no specialisation
Established: 1979

Selven Ltd
3-5 Suthavon Street
Witham
Essex CM8 1B1
Tel: 0376 519413
Leeds
LS18 4RJ
Tel: 0532 589980
Telex: 557061
Contact: Paul Rayner
No of packs: 10
Hardware: CP/M, CP/M-86, MS-
DOS
Software: no specialisation
Established: 1979

Metacomco
115 Glenearne Rd
St Werburghs
Bristol BS2 9UY
Tel: 0272 550756
Telex: 44220
Contact: Derek Budge
Best seller: Cambridge Lisp 68000
Hardware: 68000 based
Software: Languages
Established: 1981
Turnover: £425,000

Systematics
International
Microsystems
Cleves House
Hamlet Road
Haverhill, Suffolk CB9 8EE
Tel: 0202 735656
Telex: 99431
Contact: Lesley Logden
No of packs: 10
Best seller: Tomorrow's office
Hardware: MS-DOS Computers
Software: Application generators
Established: 1978
Turnover: £2,000,000

Sosoft Ltd
300 Ashley Road
Parkstone
Poole, Dorset
Tel: 0202 735656
Telex: 99431
Contact: Lesley Logden
No of packs: 10
Best seller: Tomorrow's office
Hardware: All leading stock
Software: microcomputers
Established: 1978
Turnover: £250,000

Microcomputer
Products
International
Central House
Cambridge Road
Barking, Essex IG11 8NT
Tel: 01-591 6511
Telex: 892395
Contact: Barry Neil
No of packs: 150
Best seller: BSTAM
Hardware: CP/M, CP/M-86,
MSDOS, PC-DOS-based micros
Software: no specialisation
Established: 1975
Turnover: £1,000,000

Allied Aims Ltd
107 Station St
Burton-on-Trent
Staffs DE14 1HZ
Tel: 0283 45320
Contact: M. D. Connolly
No of packs: 6
Best seller: Vehicle fleet cost control
Hardware: 308X, S34/36,
PC, CA, SYFA
Software: no specialisation
Established: 1981
Turnover: £10,000,000

Midlectron Ltd
Nottingham Rd
Belper, Derbyshire
Tel: 077382 6811
Telex: 377879
Contact: C. Base
No of packs: 200
Best seller: Wardstar
Hardware: HP, Corona, Morrow
Software: MicroPro, Ashton Tate,
Digital Research
Established: 1972
Turnover: £12,000,000

Criterion Computers
Ltd
12 George St
Gr Yarmouth NR31 1HR
0493 3160
Telex: 97329
Contact: G. Carter
Best seller: Plant and Tool Hire
Hardware: All CP/M and MS
DOS
Established: 1979

Financial and
Corporate Modelling
Consultants Ltd
46 Chagford Street
London
NW1 6RB
Tel: 01-262 1021
Telex: 88811
Contact: J. A. O'Connell
No of packs: 6
Best seller: Finar
Hardware: no specialisation

Redwood
2 High Street
St Albans
Herts
Tel: 0727 38138
Contact: Tony Heywood
No of packs: 6
Best seller: Currently Uniplex word
processing

Software: Unix
Established: 1980
Turnover: £12,000,000

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Software: Unix
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The trade gap widens as UK export hopes are dashed

1983 was a black year for UK computer trade, with the total imbalance reaching a record figure. John Aczel reports

BRITAIN's trade deficit for computer systems has grown markedly in recent months, and the total imbalance is estimated to have reached a record figure for 1983.

The latest trade figures are for September and show a gap between exports and imports for complete systems of £11.4 million in that month. For the first nine

months of the year, the deficit was massive, amounting to £97 million in this field.

To some extent, it was expected that these sectors would show a big deficit resulting from the buoyancy of the British market for computers. Imports have taken advantage of this high level of demand, but exports have not performed as well as expected.

Overall imports have remained high, despite the recent fall of sterling against other currencies. Foreign suppliers have been willing to reduce their prices in sterling terms, even if this has meant lower margins for their products, and competition has been fierce among most importers.

Total imports of CPUs reached a record figure of £51 million in September, representing an increase of 13% compared with three months ago. For the first nine months of 1983 the total amounted to over £380 million, which was considerably higher than in previous years.

In terms of volume, the increase in foreign deliveries has been even more pronounced. Over 110,000 CPUs entered the UK in September, which was about double the figure reported three months earlier. And the cumulative figure has gone up markedly, reaching 420,000 units.

Price-cutting has been widespread, and the average price of a processing unit dropped to about £450. This was considerably lower than at the beginning of the year, and further falls are expected in this field over the coming months.

Imports of processing units have come in from a wide range of sources and a significant increase has been reported from Japan. Its sales amounted to £4.8 million, which was tenfold increase compared to three months earlier.

Deliveries from Ireland have also been higher and rose by 55% to £14 million.

Deliveries of processing units from Ireland have also been higher and rose by 55% to £14 million.

been recorded from Ireland, with its sales rising by over 60% to £3.3 million in September from that source. Sales by the US, however, have been lower and dropped to £3.5 million, while a similar trend was also seen with regard to West Germany and Italy.

British exports of computers have shown an uncertain trend, and overall sales abroad were level, peaking in value terms over the past few months.

UK exports of processing units amounted to £34.7 million in September, compared with £34 million three months earlier. In addition, the total for the first nine months was somewhat lower than expected: £267 million in this sector.

In terms of volume, there has been a useful increase in sales abroad, with exports of CPUs reaching over 40,000 units in September; this was about double the June figure, but most of the rise was due to higher exports of smaller types of equipment, particularly at the cheaper end of the market.

The main reason for this fall is believed to be lower delivery to West Germany, where sales dropped 30% to less than £1 million.

The outlook for exports remains cloudy at the moment, though the potential for higher delivery of micros is promising. Complete systems amounted to £14.5 million in September, against £16.4 million in June. The total for the first nine months, however, was well maintained: over £100 million between January and September.

It appears that there has been a trend towards importing processing units without input-output attachments in recent months. This may partly explain the fall in deliveries of complete systems, though this trend has varied considerably over the short-term.

For imports of complete systems, higher deliveries have

been recorded from Ireland, with its sales rising by over 60% to £3.3 million in September from that source. Sales by the US, however, have been lower and dropped to £3.5 million, while a similar trend was also seen with regard to West Germany and Italy.

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For imports, however, a significant growth in demand is expected, especially from Japan. Some of the European countries are now stepping up their sales to the UK and this will mean that British trade deficit for CPUs and complete systems will increase even further in the coming months.

EXPERT SYSTEMS

Mentor leads the way

It's not only academics who are waking up to expert systems. Nicholas Benwell plots the commercial rise

IF the British Computer Society forms a specialist group in a computer topic, then it is surely fair to claim that there must be an academic interest in that topic. If in the same month the BCS holds a two-day management tutorial in that computing topic, and Logica offers a salary of up to £20K for people with experience in that subject, then there must be academic and commercial interest in it.

Expert systems is the name given to the new development. Expert systems work things out in much the same way as the reasoning in the above paragraph — they actually imitate the way people solve problems.

Site-planning is a topic where less than 100% success is inevitable and where the knowledge base is certain to be empirical, so it matches at least two of those criteria.

All DEC's expert systems resources are currently based in America but MacDonald is planning to introduce them to DEC Europe.

Mentor is an expert system kernel that is linked to Rapport, a relational database management system. As a result, it can access a large database in the course of its deductions, so providing a general purpose prototype that will give working demonstrations of part of a proposed expert system.

Mentor is rule-based, that is to say, the system follows a set of rules of the form "if conditions then actions" in order for it to manipulate facts with a view to reaching a goal or conclusion.

At the BCS tutorial, attended by over 70 people and chaired by no less a guru than Alex d'Agapeyeff, enthusiasm for the new faith was overwhelming.

The demonstration consisted of a very simple model based on diagnosing a common disease from some simple symptoms. Five diseases were known to the system and, using some hypochondriacs from the audience, they showed convincingly how the expert system chooses between symptoms and grades of symptom.

The UK researchers, as usual, were one of the first on the scene with their artificial intelligence work, but the Lighthill Report of 1972 ensured that SRC funding was speedily run down and those who could, emigrated where they knew funding was to continue. Now expert systems are big business and most of the products are American or Japanese.

To judge whether expert systems are readily modified, SPL attempted to add a sixth disease, scarlet fever, and its slightly different symptoms. Apart from some trivial problems with the editor, the company convinced a group of sceptics that using procedures akin to a BDMS enquiry language, it could install a substantial amendment like that in a matter of minutes. Further, those changes depended more on expert medical knowledge than on an expert computer freak's talents.

Max Bramer, from the Open University, summed up expert systems in his paper. He wrote:

"A typical system will comprise a knowledge base of rules of the general form 'if X and Y and Z... then deduce A, with probability... together with a control module, called an inference engine, which manipulates these rules to perform inferences, make diagnoses, etc."

"The knowledge base varies from one domain to another, whereas the inference engine is (largely) domain-independent. Thus a system's rule-knowledge can be regarded as data manipulated by its inference engine."

Expert systems are being used in the UK in disciplines other than medicine; we heard of their use in the metallurgy of pipework in chemical plants, and in Unilever's industrial research laboratories.

Stuart Moralee, of Unilever, told us that the company has six separate expert systems up, and

running, each with between 100 and 200 rules.

One of the examples involved the interpretation of infra-red spectra — surely an expert's subject if ever there was one — which works using a pattern-matching technique.

It has cost the company over £40,000 so far but Moralee, like MacDonald, quoted the genesis of X SITE, an expert site planning system, with planned overheads of about four people working within a budget of \$250,000 per year that will yield annual benefits for exceeding that outlay, if existing expert systems are anything to go by.

For many years, well-respected universities like Edinburgh and Stanford plugged away at artificial intelligence, widely regarded as the precursor to expert systems.

It is fair to say that this work aroused only minimal interest in America but MacDonald is planning to introduce them to DEC Europe.

Not since the Russian Sputnik has anything had such an effect in shaking up US technology



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£'000

£'000

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Italy

Japan

Netherlands

US

Imports of processing units

Belgium

Denmark

France

West Germany

Italy

Japan

Netherlands

US

Imports of complete systems

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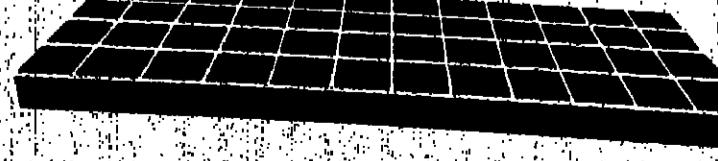
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PROTOTYPING

How prototyping is making system design user-friendly

In the US users are being presented with system prototypes for evaluation. Guy Thompson reports

WHAT is prototyping? Another buzzword? A systems development method for the future? Or a step backwards to the old days of back to an envelope system design?

The prototyping method of systems development is a current US favourite, where its user friendliness and its speed at implementing systems has converted many.

It is a method that was conceived in the US in 1977 as a reaction against the development methods then in use. These can perhaps best be described as sequential in which a feasibility study is prepared, then, if feasible, a general design describing functions broadly in user terms, next based on that a technical design is prepared which leads to programming, testing, acceptance and finally implementation.

At each stage (in theory) agreements are reached, with amendments if necessary before going on to the next stage.

This approach, normally li-

the prototyping method, however, are the speed of development, and the high level of user involvement.

The fast development time is achieved mainly for two reasons: by use of modern software aids, application generators, report and screen formatters, high level languages etc; and by the elimination of time consuming corrections during the final stages of development.

The high level of user involvement comes because after each prototype is delivered to the user, the results of their evaluation (arrived at by a period of using the prototype) are incorporated into the next prototype.

So what are the stages of a prototyping development? Three fairly distinct phases have been identified.

Phase I, Analysis: This includes first the preliminary or feasibility study, and then (if feasible), an information analysis study to determine the functions and to analyse the data flows within the system.

This approach, normally li-

tive of the iteration phase is to build the prototype quickly making heavy use of software development aids it is quite possible there are unacceptable operational inefficiencies present, such as slow response times, too heavy a use of CPU, too much store used, very long batch runs etc.

One of the major activities in this phase is to eliminate these. This is usually achieved by an analysis of the operationally problematic elements with trials using full data loadings to isolate the problem areas, although these have often already been guessed at during Phase II.

That is the theory, insofar as a theory has yet been established, but how does it work out in practice?

Here are some observations made during the course of a typical application of the prototyping method. The development was of a mixed operational and informational system, based on a relational database containing 40 megabytes of data.

With the iterative approach all

sorts of problems and faults that

were discovered could be allowed for in the next iteration.

The worries surrounding user acceptance of the system were absent since in a sense the system was designed by the users and after each evaluation, given that the observed faults had been corrected, the system was accepted.

Since the user found it difficult to distinguish data errors from system faults it was necessary to use good quality "test" data, which was both accurate, realistic and representative.

From the system and database

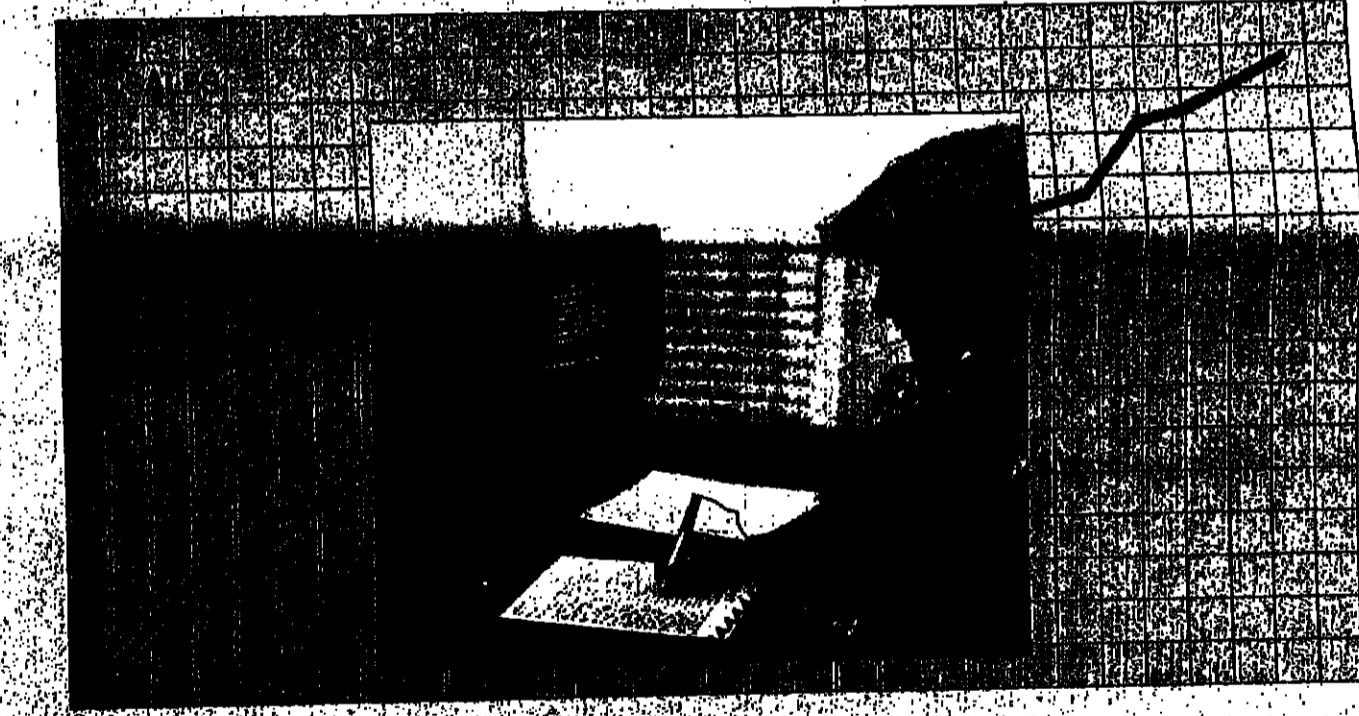
There was a clear advantage for the users in that familiarisation and training could begin early with the first prototype.

There was less chance of building unwanted elements into the system since any of the designers faulty perceptions of what the users wanted were filtered out at an early stage.

The need for hardware early in the development was very apparent (early on compared with a sequential development), since system building began after a comparatively short analysis phase.

Guy Thompson is a member of the advisory staff of the Dutch Information Systems House PANDATA (member of the CAP-GBMINI-SOGETI group) and specialist in prototyping techniques.

Quicker data capture will capture more of your market.



Two main characteristics of the prototyping method are the speed of development and the very high level of user involvement

kened to the stages in building a house, has become accepted as the only sound method for installing a computer system. There are, however, problems which often manifest themselves.

It is generally felt that the first prototype should be ultra simple since it is primarily to test out basic assumptions; the general structure of the system, to check the development framework, to ensure the software aids work and the hardware configuration is sound, and to ensure the interaction between the development team and the users is harmonious.

During the technical construction of the system there is little more than superficial contact between builders and users.

This gives rise to, at best a lack of involvement and at worst polarisation between user and builder, leading to problems with acceptance.

System faults and limitations are discovered only at the end of the line during acceptance trials where they are at their most expensive (in nervous energy as well as in time) to rectify. This is because the first real understanding is that the users have of the system is when they see it actually functioning.

The prototyping method was an attempt to remove this sort of problem. As its name implies it is concerned with constructing a series of prototypes of the system, each prototype being a successively refined and extended version of the previous one, until a satisfactory system evolves.

The two main characteristics of

With the cost of a direct sales force going up and up more companies are turning to a telephone sales and ordering operation.

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March 13-14

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- 8.30 COFFEE AND REGISTRATION
- 9.15 Mass Retailing of Business Micros — Michael Milman, managing director, Greens Business Systems (a subsidiary of Debenhams Ltd.)
- 9.55 How dealers should present themselves — Chuck Hansen, managing director, Computerland.
- 10.35 COFFEE
- 10.55 What Apple expects from their dealers; what Apple gives their dealers in return — Keith Hall, sales and marketing director, Apple Computers (UK).
- 11.55 Retailing through education and training — G. Summers, managing director, Planning Consultancy Ltd.
- 12.25 LUNCH

MARKETING TO THE PROFESSIONAL AND CORPORATE MARKET

- 2.00 Choosing Your Products — Jack Schofield, editor, Practical Computing.
- 2.40 Market products and sales channels — key considerations in the building of the dealer programme — John Crawford, vice president, world wide dealer programmes, Data General Corporation.
- 3.20 Personal computer dealer marketing in 1984 — Nigel Henzell-Thomas, personal computer dealer manager, IBM Ltd.
- 3.45 DEC's approach to the marketplace — Mike Harding, marketing specialist, Digital Equipment.
- 4.10 How to approach the corporate customer — Hal Hovland, joint managing director, Hovland Business Systems.
- 4.50 CLOSE

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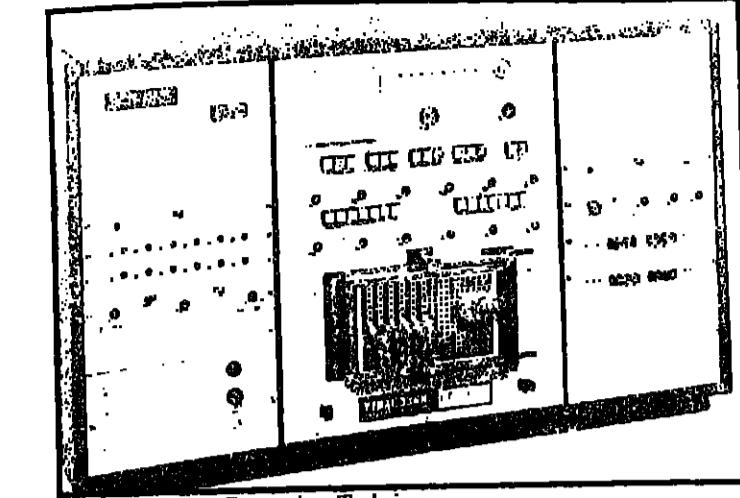
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PRODUCTS



The 336H from Computing Techniques.

Hand computer has 3,100 bytes built-in

CLOCK and calendar functions, text-file editing and extended memory are among the built-in features of the HP-41CX, a handheld computer announced by Hewlett-Packard.

The new computer includes all the features of the HP-41CV, plus built-in time and extended functions/memory modules, a text-file editor, and 20 new commands. The HP-41CX has over 3,100 bytes of memory built-in.

A built-in time module enables the HP-41CX owner to use the calculator as a time-based system controller, an alarm clock, an appointment reminder, a calendar, a timer or an advanced stopwatch.

In addition to the standard time module functions, the HP-41CX has five new time commands designed to improve alarm capabilities and time operations.

The built-in extended functions/memory module has 868

patch panel, linked to the 336H's main patching by 36-way trunk line.

The computer's FET amplifiers

use specially selected components to give maximum immunity to drift. Mode selection and analogue system control are achieved by using high-speed FET switches, operated by digital logic.

The 336H is fitted throughout with 0.1% tolerance computing components, and may be operated manually or at fast repetitive rates with time constants down to 1ms.

Because of its hybrid capability, the 336H can be linked to any general-purpose digital computer to provide simulation of a plant under direct digital control. This feature has been found to be of importance when education or operator training is carried out on a restricted budget, as realistic simulator instruction can be provided without the need to involve the plant itself.

Computing Techniques Mfg

(CW), Brookers Road,

Billinghurst,

West Sussex RH14

9RZ. Tel: (040) 381 3171.

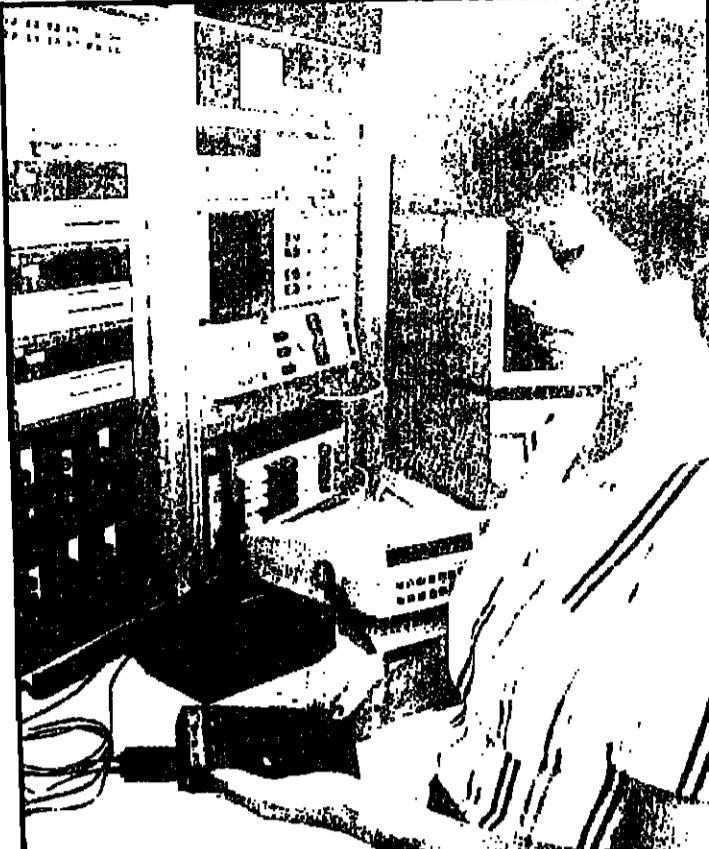
bytes of extended memory, extended memory-management functions, programmable versions of several HP-41 functions, and several register and flag manipulation functions.

Other features of the HP-41CX include an RPN (Reverse Polish Notation) operating system, in 24 Kbytes of ROM, that allows users to see intermediate results and recover from errors easily.

The alphanumeric keyboard is redefinable, so users can assign their most frequently used programs or functions to any key for quick access and execution. Keyboard overlays are also available for HP-41CX users who want to label predefined keys.

The recommended retail price is £229.71, exclusive of VAT.

Hewlett-Packard (CW), Eskdale Road, Winnersh, Wokingham, Berkshire RG11 5DZ. Tel: (0734) 696622.



The HP-41CX with more than 200 built-in functions.

Analogue/hybrid addition to Vidac

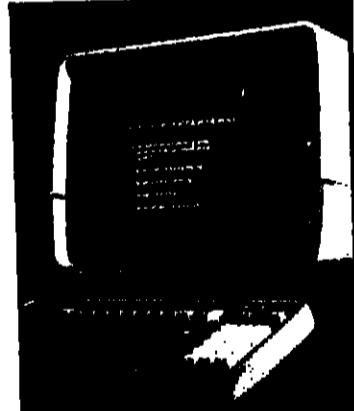
LATEST model in Computing Techniques' Vidac range, the 336H, is an analogue/hybrid computer, which can interface with general purpose digital computers both for plant or process control and for data transfer.

Leading features of the 336H include mode and computing control by TTL compatible logic signals; modular design, so that expansion units can be added for increased capability; manual control by self-illuminating push-button switches; and independent control of each integrator, permitting interactive solutions of boundary value problems and partial differential equations.

The standard model, available for £5,850, is capable of solving a sixth order differential equation. Computing Techniques has developed a range of non-linear modules to increase this capacity, such as diode limiters, multipliers, function generators and resolvers.

In addition, a logic extension unit allows a wider range of logical and control functions to be performed. This unit has a separate

Automatic telex dial system



The ATS Vital.

long to coincide if necessary with overseas office hours.

The KM700 does its own billing and keeps a printed record of all transmissions, incoming messages, supervisory functions and any unsuccessful attempts to connect with the telex network.

ATS (CW), Bridge Road, Haywards Heath, Sussex RH16 1UB. Tel: (0444) 414911.

Three-in-one printer

VERSAPRINT 500, Lear Siegler's new printer series, offers colour dot addressable graphics, near letter quality (NLQ) and 180chps printing output, for under £1,400.

In near letter quality mode at 45chps and using a 14x18 character matrix, the output is almost indistinguishable from typewriter quality, says Lear Siegler, while in draft mode VersaPrint operates at 180chps and, using its microprocessor and bidirectional printing facilities, sets out the fastest way of producing hard copy.

Lear Siegler Data Products (CW), Orchard House, Compton Road, Brookwood, Surrey GU24 0AT. Tel: (048 67) 640331.

Filtering out interference

A FILTER plug, which can be fitted to the computer supply cable in place of the standard 13-amp square pin plug, is introduced by Galatrek International. It is designed to protect micro and minicomputers, word processors and all voltage sensitive equipment from mains born interference.

The small unit will protect equipment from transients and spikes which can wipe out memory and corrupt data, says Galatrek. The filter plug also protects from momentary outages, mains RF interference and lightning disturbance. Price is £29.95.

Galatrek International (CW), Scodand Street, Llanwarr, Gwynedd, North Wales. Tel: (0422) 806687.

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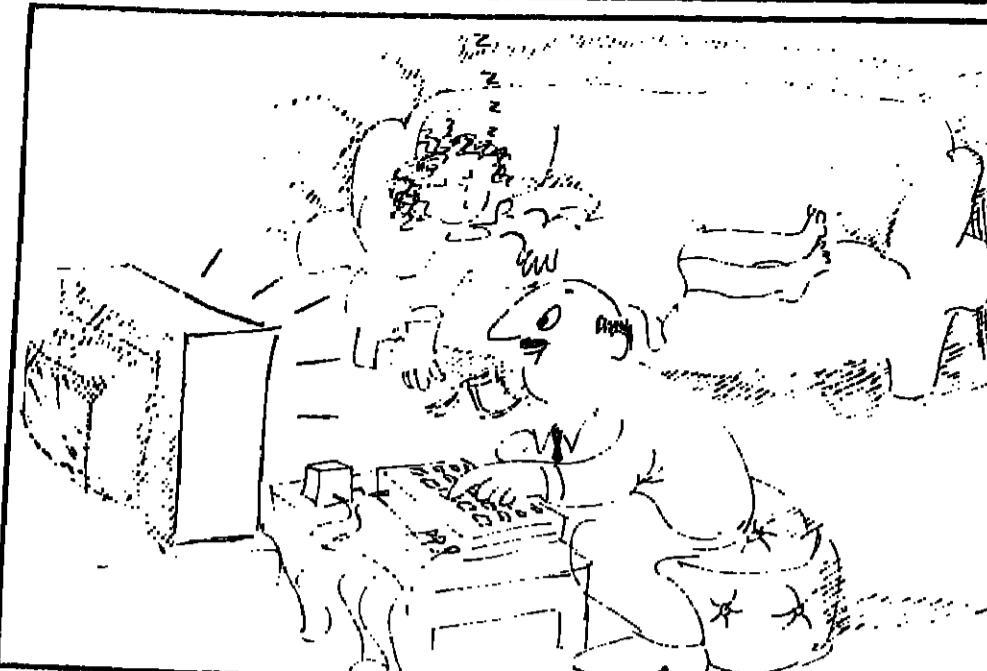
Nice text, shame about the pictures

The Micro Maze: A Guide to Personal Computing, Wynford James, Micro Press, Tunbridge Wells, £5.95

YET another introduction to microcomputers has hit the market in the shape of *The Micro Maze: A Guide to Personal Computing*, from former mathematics teacher and now ICL technical author, Wynford James.

Like the others, it has the obligatory potted history of computing, the usual introduction to binary arithmetic and the internal workings of the machine, chapters on programming and peripherals and a guide to choosing a computer, including brief reviews of some popular models.

The book has little chance of winning attention on bookshops' shelves alongside other, flashier offerings covering exactly the same ground. The few photographs are uninspired and have not reproduced very well, leaving the visual



"Fascinating things, computers!"

relief largely to a handful of indifferent cartoons.

This is a great pity, because the text is excellent.

Even when describing how a computer works, the author resists the temptation to get too bogged down in technical language.

Throughout the book he makes simple but extremely effective

comparisons between the way computers work and the way humans behave.

The result is a very clear picture of what microcomputers, peripherals and programming are all about, even for the beginner.

The book is aimed at home, business and education users but concentrates on the very bottom of

John Kavanagh

Robots as MPs? Back to reality

Reinventing Man: The Robot Becomes Reality. Igor Aleksander and Piers Burnett. Kogan Page, London, £9.95

ANYONE worried about questions like, "Should a robot be allowed to stand for Parliament?" and "Would you let your daughter marry one?" will be reassured by *Reinventing Man*, a look at the reality of robots by researcher Igor Aleksander and writer Piers Burnett.

That involves recognising what is involved in pattern recognition rather than following simple program instructions or rules set by those governing chess pieces.

The last third of the book then goes into a pattern recognition project worked on at several UK universities by Igor Aleksander and others to develop this idea.

After the readable and down-to-earth description of robots and artificial intelligence this section becomes too much of an academic paper – and, one suspects, is aimed for further research funds. Certainly the authors' claim to be writing for the layman wears thin here.

For all that, the book's 30 pages provides an interesting comparison between the practical aspects of robots and man's aspirations for them.

John Kavanagh

But, it argues, this limited success means Wiener's more important ideas were ignored – research into those ideas on bringing robots which imitate the human mind's work.

That involves recognising what is involved in pattern recognition rather than following simple program instructions or rules set by those governing chess pieces.

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Putting the computer firmly in perspective

Computer Power and Human Reason, by Joseph Weizenbaum, Penguin Books (Pelican), £2.95

WEIZENBAUM states in his introduction that this book is not primarily about computers. Computer science (of which he is a professor at the Massachusetts Institute of Technology) is used as an example to illustrate his main concern: the reluctance of scientists to accept responsibility for the potentially disastrous effect their work can have on the world.

As he admits, this is not an original view, but it is certainly worth repeating, and Weizenbaum argues his case thoroughly and convincingly. This, however, is only in the last chapter of the book. The preceding nine chapters explain computers and their limitations.

The author is particularly scathing about the wilder claims of the artificial intelligence, especially the notion that man can validly be regarded as nothing more than an information processor, and that, in theory, be precisely emulated by a computer.

His concern is expressed in his conclusion that "since we do not now have any ways of making computers wise, we ought not to try to give computers tasks that demand wisdom".

In his desire to preserve democratic integrity, Weizenbaum expands his arguments with a degree of detail which may be excessive, though the result is to make his case luminously clear and watertight.

The book was first published in 1976, and while technological developments have in no way invalidated it, the claims for artificial intelligence have so some extent been moderated in the interval.

This, however, is a minor detail.

Computer Power and Human Reason is a brave and thought-provoking book, and its central theme is of the greatest importance to scientist and layman alike.

Hugh Bushy

Is C really worth it?

Learning to Program in C, Thomas Plum, Prentice Hall, Englewood Cliffs, New Jersey, 07632.

THE Unix wagon marches on, carrying along the programming language C. Unix, I grant, is here to stay, but is C the best programming language for writing business applications?

Or is C just a piece of trendy ephemera that is going to fall by the wayside of languages like RUM?

Certainly, the language has its critics, who argue that it is too academic and hard to maintain. Use instead a language like RUM, they exhort, which is far more portable among programmers, if not among machines.

Readers are left to judge these issues for themselves in Thomas Plum's *Learning to Program in C*. They are given a pretty exhaustive technical treatment with plenty of examples of C programs, but the book lacks a wider perspective.

The question, "Why write in C?" is left largely unanswered. The author does go on about portability and efficiency. It is true, but fails to offer this with the difficulties of writing good code in C and then maintaining it. Plum describes his book as a

tutorial rather than a manual. In this he can be credited with some success, but he has not entirely managed to escape the mathematical mentality that bewitches writers of books about computing.

The prose is of fair quality, but I feel that several times the author has not quite risen to the occasion, and fails to think clearly enough. As a result the reader is sometimes left to unravel the detail.

The text is split clearly and sensibly into chapters on data, operators, statements, functions, pointers and structures. There is also a chapter on software development, which is useful but could have been developed further.

An important aspect of C is the use of pointers. On this matter, Plum does well, and draws our attention to the key fact that the value of an uninitialised array in C is equal to the address of the first element of the array.

A pointer variable holds only an

address, and C allows integers to be added to pointers, with automatic scaling of the answer by the number of bytes in the variable.

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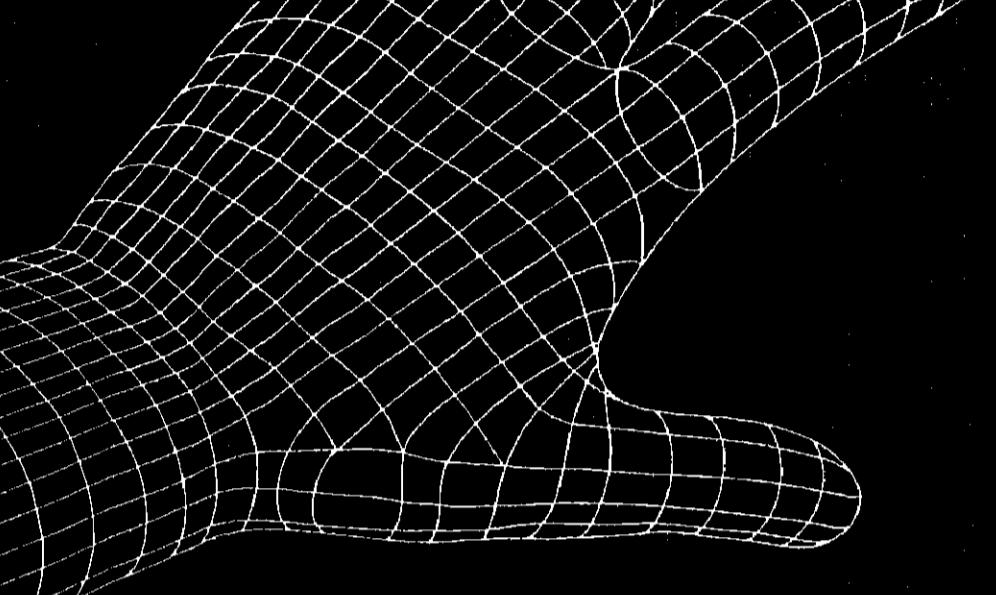
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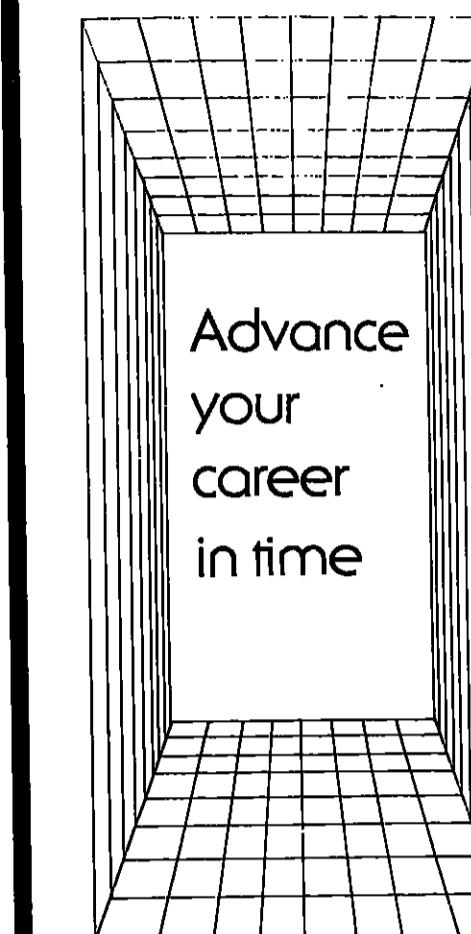
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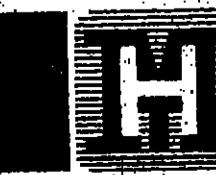
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You will have personal hardware development facilities on a range of VAX 11/750's which can be load onto Intel 8086.

You will be working in a team structure within a company which is under a group

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Job no 1110

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RTL are seeking experienced personnel in the following categories

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We offer fixed term contracts of varying duration involving challenging projects in several locations. Every assistance is offered to 'first time' contractors in setting up their operation and administering business affairs.

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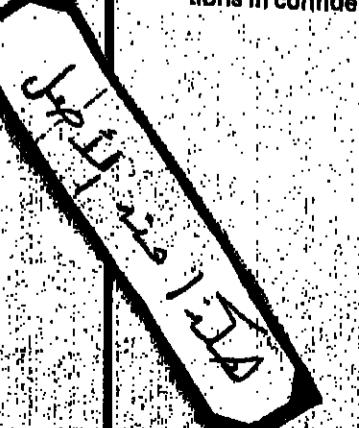
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West Germany
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Telefax: 0 61 96/4 63 51
Telex: 4 15 867 star d



The Hunterskil Group of Companies



The Hunterskil Group provides essential computer skills across Operations and Systems/ Programming to installations throughout the UK and Overseas. Contract and Permanent opportunities exist throughout our Group and the following are some of the immediate contract requirements at Knight Computer Services and Hunterkil South.



CONTRACTS

Systems and Programming

IBM 4380 Chief programmer. Must have PL/I, DL/I, CICS experience. Unipac would be useful. Type assignment c. £400 per week. Ref: K1402
IBM PC Programmer wanted for 3 month assignment starting end of March. Must have Focus experience. Ref: K1400
IBM 4380 Applications Programmer. Essential skills CICS, VSAM and VMS. TSO would be useful. 3 month assignment. Ref: K1381
Wang VS PDP11 Analyst/Programmers – ASAP – Middlesex. Ref: E1396
DEC VAX VMS MACRO 38 Programmer – London Ref: E1393
DEC PDP II, RSX II, COBOL Senior Programmer – ASAP – Farnborough Ref: E1392
HP3000 + related software. Programmer & Analyst/Programmer – All areas Ref: P1410
Rediffon R Range, Editor. Programmers – South London Ref: P1408
IBM 4341, COBOL, CMS, VSAM, Micro knowledge advantageous. First contract in Central London, 12 months – £10,000 salary Ref: P1409
ICL DRS Business Consultant. Local Area Network, 6 months – Manchester Ref: P0897
Micro, Assembler, Pascal, Comms. Programmers. 6 months +. Ref: P0127
ICL DRS Programmer, Pascal 'C', ASAP – Manchester Ref: P0287
UNIX Programmers (Micro) Ref: P0557
Honeywell DPSS Business Consultant – 6 months – Manchester Ref: P0797
Datapoint, RMS – Urgent – Middlesex – c. £450 per week Ref: S1353
ICL 2900, VME, COBOL, IDMS, TPMS (Not essential). To start ASAP – London/Wiltshire Ref: S1365
DEC PDP, RSTS/E, BASIC + Programmers, Analyst/Programmers – Urgent – London Ref: S1371
Real Time Process Control – Herts, c. £450 per week Ref: S1110
ICL 2900, VME, VME/B, DDS, IDMS, TPMS. All positions from Programmers to Business Consultants and Designers – Urgent – all areas Ref: S2000
FORTRAN+ – URGENT – Senior Programmer. Start date March – long term. Must have min of 5 years Real Time Data Acquisition and control. To work on Norsk Data. Interesting and involved application – Oxford, c. £500 per week. Ref: S1403
FORTRAN 77 Programmer with possible experience of IBM 3081 and MVS. Nord 100 experience useful (not essential) Oxford, c. £450 per week. Ref: S1404
ICL Designer IDMS – ASAP – 6-12 months – Birmingham Ref: S1316
ICL Designer IDMS, TPMS – Bucks Ref: S1372
ICL 2966, IDMS, TPMS Performance and training specialist – Bucks. Ref: S1405
ICL 2900, VME, IDMS, SCL – 6 months + Analyst/Programmer. Good for first time contractors – City, 2375 per week. Ref: P1406
ICL PLAN Programmers. Immediate long term vacancies – Middx, c. £500 per week Ref: S1315

Overseas

IBM 4300 Systems Programmer contract. VM/CMS and DOS/VSE to work in Germany on operating system conversion. Ref: K1401
IBM 4300, COBOL, CICS, DL/I, Analyst/Programmer x 2 to write Management Information System for 12 months in Brussels. Ref: K1398
IBM System 34, RPPM with strong operational background – Spain/Italy. Ref: E1394
DEC PDP II, RSTS/E, BASIC + Dutch speaking Programmers/Analyst – Holland. April start. Ref: E1390
PRIME, BASIC Senior Programmer/Analyst, Senior Programmer. March start – Belgium. Ref: P1411
Burroughs & MCP, Systems Programmer – Belgium Ref: S1138
ICL 2900, VME, TPMS, IDMS useful. System Programmers and Programmers – Holland/ Switzerland. Ref: S1000
Datapoint conversion DOS, RMS – long term. Team of 4. German useful/not essential. Ref: S1000

PERMANENT OPERATIONS

IBM SYS 34/38 OPERATIONS MANAGER £14,000 LONDON Good technical background and strong man-management ability to control all DP staff. Banking experience an advantage. Ref: OPS1268
HP 3000 – MPE OPERATIONS SUPERVISOR £29,500 LONDON In excess of five years experience is required, preferably in a Financial environment to supervise 3 staff. Ref: OPS1269
ICL MRS – TIME SENIOR OPERATOR £9,000 MIDDX A good ME28 background with the ability to write CL working 3 shifts. Ref: OPS1270
WAX 11/78 – VMS SENIOR OPERATORS £8,000 LONDON Sound DEC experience in a Commercial environment to work extended days in a large International company. Ref: OPS1257
IBM 4380's – VM DOS/VSE CICS OPERATORS £6,200 to £9,000 ALL AREAS Various positions in and around London working shifts. Ref: OPS1259/83/84/85
IBM – MVS IMS VTAM NETWORK OPERATOR £7,700 SURREY Monitoring of communications network working double day shifts. Ref: OPS1248
IBM – MVS OPERATOR £7,500 HERTS 1 year's experience to work 3 shifts. Ref: OPS1247

CONTRACT OPERATIONS

IBM MVS JCL WRITERS (Dutch speaking if pos) for various contracts in Holland. Ref: C22
HONEYWELL DPSS JCL WRITER (Dutch speaking) for mid-term contract in Holland. Ref: C21
JCL G311 OPERATOR for indefinite contract to start in near future in Bristol. Ref: C20
HP3000 OPERATORS for mid term contract. Ref: C19
NETWORK OPERATORS always required. Ref: C18
HONEYWELL 14 OPERATOR to work part-time evenings starting March. Ref: C17



Knight Computer Services Limited
Specialist Computer Staff

14 Old Park Lane, London W1Y 4JG
01-580 7404

01-491 4706
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CONTRACTS

Systems and Programming

IBM DOS/VSE COBOL CICS Programmer for 3 months plus starting 5th March. £425 per week Ref. DR.

MANTIS Programmer

to work under DOS VSE to start immediately 3-6 months. £425 per week Ref. DR.

IBM ANALYST/PROGRAMMER

with DOS VSE VM COBOL CICS & DL/1 to start immediately. £430 per week Ref. DR.

SYSTEMS PROGRAMMERS

in various locations with MVS and/or DOS experience. Start immediately. £500 plus per week Ref. DR.

ICL TECHNICAL SUPPORT

Base and Superstructure IDMS and TPMS. Start immediately. Long term contract. £500 per week Ref. LP.

ICL COBOL PROGRAMMER

with IDMS & TPMS. Long terms. Start end of February. £450 plus per week Ref. LP.

ICL COBOL ANALYST IDMS TPMS.

Long term. Start now. £500 per week Ref. LP.

PRIME ANALYST

6 month contract. Start now. £500 per week Ref. LP.

IBM PL/1 Assembler Programmer

with "Focus" experience. Very long term contract. £500 per week Ref. LP.

IBM CICS Lecturer

to give occasional seminars. Fee negotiable Ref. LP.

IBM ANALYST PROGRAMMER

with TSO (RACF) PL/1 to assist with DOS VS to MVS conversion. £500 per week Ref. DR.

DEC VAX COBOL VMS/DBMS PROGRAMMER

6 months. Start immediately £450 per week Ref. LP.

DEC VAX BASIC VMS SENIOR PROGRAMMER

with Design experience for 6 months contract. Start in one week. Very high negotiable rate Ref. DR.

OPERATIONS

IMS MASTER TERMINAL OPERATOR

to work on large MVS System. Start immediately. Long term. £220 per week Ref. NG.

PRIMOS OPERATOR

for long term contract to start immediately. £234 per week Ref. NG.

BURROUGHS 1995 OPERATOR

with MCP & DMS Database experience. 3 month duration. Start now. £230 per week Ref. NG.

MVS OPERATOR

with JES2 IMS & VM experience. Start now. £220 per week Ref. NG.

DOS VSE OPERATOR

with VM experience to start end April for 9 months. £200 plus per week Ref. LP.

IBM MVS JES2 IMS OPERATOR

to start immediately. 3-6 months. £200 plus per week Ref. LP.

JCL WRITER/OPERATIONS ANALYST

with MVS experience for forthcoming requirement Ref. NG.

HUNTERSKIL SOUTH

Specialist Computer Staff

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If you feel that your profile matches our requirements then apply in confidence to our Advising Consultant, Alan Carnell on 01-935 0871 or alternatively submit a detailed Curriculum Vitae to the London office reference GS3.

UNIX is a Trade Mark of Bell Laboratories Inc.

Our profile calls for a software engineering professional who has gained considerable experience in developing and implementing guidelines for software design and development. You should have experience of working with large scale software and understand modern design technology. Whilst experience of specific software is unimportant, a previous background in a product-oriented software environment is essential. In addition a sound understanding of formal structured methods is of paramount importance, particularly in software change control, project management and present day 'top down' design techniques.

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LONDON AND THE HOME COUNTIES

RPG - ALL LEVELS CENTRAL LONDON

The IBM GSD range is now a market leader in small to medium business system equipment and the call for RPG PROGRAMMERS is stronger than ever. Several clients with applications have asked us to recruit for them. There is a wide range of choice in environment and positions, with something of interest whatever the level. At this point it seems silly just to head for the highest salary on offer as a more careful view of what could be on offer is always worthwhile. If you feel that a range of job could give you more interest, experience, salary or promotional prospects then please contact Marshall-Clyman in London for an informal discussion.

BANKING SECTOR £12-21K Pkge + Car

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SOFTWARE HOUSE £10-15K SURREY

A leading software house have a series of current requirements for PROGRAMMERS with good COMMERCIAL experience. Because of the wide range of services and machines they have a general call for people with a COBOL, BASIC or FORTRAN background. The nature of the work is varied and duties will involve some travel both home and abroad and candidates will be required to demonstrate their ability to shoulder responsibility for client contact at all levels. A HIGHLY COMPETITIVE salary with a generous BENEFITS package will be offered with a CAR for more senior positions.

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**DEC VAX
£s NEG CITY**
The well-established company, WEST LONDON based and the leader in its field, require additional DP staff to strengthen their existing department. Their current requirements consist of two ANALYST/PROGRAMMERS with a minimum of two years' BASIC+ on DEC/PDP under RSTS/E, a SOFTWARE ENGINEER, with a thorough knowledge of RSTS/E and its internals, and a BUSINESS ANALYST with a sound commercial background, able to evaluate the company's offsite automation requirements. Previous application experience is not important as this client is looking for flexibility and potential, with a preference shown towards candidates who can demonstrate these essential skills. Some involvement with MACRO or operating systems would be useful. A GOOD BASIC SALARY with a GENEROUS BONUS SYSTEM is on offer.

18 MONTHS' IBM? to £9.5K + Benefits

C.12K W. LONDON
A household name in retailing based on the West London borders have development plans envisaged to last well into the late 80s. The company are currently running three ICL ME20s using TME/MTS and are heavily committed to IDMS. To fulfil these plans, they require additional PROGRAMMERS and ANALYST/PROGRAMMERS with a minimum of 18 months' COBOL experience to join the team. Areas of development include Point of Sale, Stock Order Entry and a large Warehouse Automation project. If you have been involved in similar systems and feel you can contribute to this company's growth then call us now for an immediate interview.

YOUNG H.P. PROGRAMMER c£10.5K + Prospects

T.C.R. has been retained by a CITY-BASED financial company developing their commercial applications to such an extent that they now require further DP professionals to supplement their existing team. The ideal candidate will be a graduate with a minimum of one year's commercial COBOL experience using COBOL in a medium or large IBM installation utilising MVS, TSO/SPF, CICS and/or DL/I. The emphasis on this occasion is put on MVS and TSO/SPF, as TRAINING in the use of ON-LINE and DATABASE techniques will be provided. This is an ideal opportunity for people who wish to move into a more technically demanding position.

IBM Personal Computer

Mass Storage Hard Disk Devices

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Our Client is a subsidiary of a major Computer Services Group whose principal activity is the sale and distribution of microcomputer products. Established for 16 years, they can demonstrate high profitability and excellent growth.

The introduction of the **PC** and exclusive distributorships for key enhancement products is supported by a highly qualified team of technicians and engineers.

Our Client now seeks an additional pre and post sales support team qualified to at least HND level, with sound micro hardware and software experience together with practical experience of mainframe communications. An element of European travel may be required for this post.

A workshop based, **PC** and enhancement products with at least three years component level repair experience of Micros and peripherals, a knowledge of TTL logic and both floppy and hard disk technology will also be required to supplement a highly skilled team of microcomputer technicians.

Salary will be no obstacle to the right Candidates, and on offer is an excellent benefits package with excellent career prospects in a rapidly expanding environment.

For further information, telephone Trevor Money on 021-236 3781 (24 hour answering service) or 021-449 1870 (Evenings and Weekends).

Birmingham

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The company is a leading contender in the market place with products to meet every need, compatible with all major manufacturers. Their reputation for support and service is second to none.

The creation of a new division has opened up the opportunity to take control of an established territory whilst building your own team to develop new accounts. Your success should lead to second-line management within two years.

You must have a minimum of 2 years' relevant sales achievement, drive, energy, and the ability and desire to lead by example.

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We provide a professional and personal service to computer personnel seeking employment on either a permanent or contract basis.

PERMANENT

No matter where you are now, consider where you want to go. The next step is vital. We will help you take the right direction. Get your c.v. to us immediately or phone us today. We will be happy to talk to you.

PROGRAMMERS 2-5 years' experience of any hardware. Especially IBM and/or database knowledge. All areas.

SYSTEMS ANALYSTS Particularly with financial manufacturing systems experience. Most areas.

ANALYST/PROGRAMMERS Do you want to move into sales support with a manufacturer? NORTH-WEST, NORTH-EAST and MIDLANDS. Good salaries and company car.

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REAL-TIME PEOPLE At all levels, programmers, designers, etc. A wide range of opportunities EVERYWHERE.

CONTRACT

COMMERCIAL PROGRAMMERS AND ANALYSTS We have a wide range of requirements for programmers with experience of IBM, ICL, UNIVAC, DEC, PRIME or HP throughout the UK with database and IP experience being an added advantage. We are also looking for a number of systems analysts with sound manufacturing systems experience on any hardware for long term contracts.

REAL-TIME PROGRAMMERS AND DESIGNERS If you have experience of "Time-Critical" applications and a knowledge of CORAL, BASIC, FORTRAN, RTL, MASCOT, etc, we probably have a contract to suit you. Contracts range from 3 months to 18 months initially. We need people to work throughout the UK and overseas.

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Near Cambridge**

A major supplier of Computer Aided Engineering systems whose broad base of expertise covers a uniquely wide range of engineering applications from solid modelling to sales order processing have a need for a Software Engineering Manager. As a member of the senior management team he or she will report directly to the Managing Director of this progressive company whose innovative approach to the integration of CAD/CAM, manufacturing and business systems has secured its position amongst the market leaders.

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A significant amount of time will be spent in liaison with first line management regarding the cost effectiveness of new product development and bespoke projects as well as ensuring that a professional and efficient service is provided to the company's marketing department and its customers.

This is an excellent opportunity for a dynamic individual with extensive software and management experience to employ his skills in a highly visible senior management position.

Please reply to: Jim Wallis:
office day: 01-741 8011
office night: 01-748 1987/1975/2160
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* Knowledge of voice PBX/data multiplexing

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* Experience of IBM 3270 (either as user or designer)

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* Familiarity with TSO, CICS etc.

Ideally you will be qualified to degree/Equivalent level and will have a proven track record in data communications. These positions represent once in a lifetime opportunities to radically develop your career and life in one of the world's key locations within a tremendously successful organisation.

Please telephone or write to Kramer Westfield International Ltd, 23 Victoria Street, Windsor, Berks, SL4 1HE. Windsor (0753) 56155 9.00 am to 7.00 pm.
Recruitment consultants in the data communications industry.

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SALES CONSULTANT c £30,000 pa

Due to continuing expansion we urgently need a Sales Consultant with previous DP industry experience and a sales track record. Based in our new Croydon offices and supported by resources and secretarial staff, you will have a key position in a newly formed sales team, supplying contract consultants and bespoke software.

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01-734 2071 (evenings + weekends)

ATA ENGINEERING RECRUITMENT
211 Great Portland Street, London W1N 5HA
(Out of hours answering service)

01-580 0000

SENIOR APPOINTMENTS - £14K +

Hoechst



THE COMPANY

The largest pharmaceutical company in the world, Hoechst employs over 7,000 people in the U.K. alone. In addition to its activities in the fields of medical products, industrial plastics, animal health and plant protection, Hoechst subsidiaries and associated companies include such household names as Berger Paints, Rochas perfumes, Trevira, Clynol and Cuprinol. The U.K. headquarters is a modern purpose-built office complex situated at Hounslow, easily accessible by road, rail or the London Underground.

THE DP ENVIRONMENT

Currently an IBM 4341 model 2 running MVS, CICS, DL/1 and COBOL, with a 3083 model E due to be installed in March. In addition, Hoechst is committed to personal computing, with 19 Apples in use under the guidance of an Information Centre.

THE VACANCIES

Two project leaders are required initially, with further expansion planned. They must be experienced systems analysts, preferably with an IBM background and a good understanding of TP and database concepts and practice. Similarly, the successful applicants need not be former programmers, but they must be able to lead a programming team. The principal qualities needed are powers of leadership, self-motivation, and the ability to take a project from feasibility to implementation.

It is unlikely that candidates with less than four years' relevant experience will be suitable.

PROJECT LEADERS to £15,000

plus substantial benefits

THE REWARDS

are considerable! With a basic salary of up to £15,000 pa, a review in June, a bonus based on Company results (an additional 2½% paid in 1983) and the possibility of an Exceptional Merit Bonus of up to 8% of salary for outstanding employees, financial rewards are among the best in the industry. In addition, benefits include:

- free private medical insurance
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- discount company shop
- 23 days leave per year
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- full relocation expenses where applicable

and the many other advantages that only working for a major multinational corporation can bring.

YOUR NEXT MOVE

is to telephone 01-499 1948 for an application form, quoting ref: GM/2/73, or write with a FULL cv to Geoff Mackenzie, P-E Appointments Division, 166 Piccadilly, London W1V 9DE.



The P-E Consulting Group

MESSAGE SWITCHING

S-COM Computer Systems Engineers is a rapidly expanding software engineering company. Our turnover has roughly trebled in each of the last three years. Our main expertise lies in state of the art developments involving communications (military, telephonic, area networks), process control, graphics and mathematical applications.

We have recently been retained (by one of our major accounts) to upgrade a digital PABX to meet exacting military standards. The initial phase of this work is investigative and requires existing systems to be documented according to ministry specifications.

We are therefore seeking to recruit two people as soon as possible to help with this project. Ideal qualifications would be:

1. Knowledge of JSP 188 standards
2. Knowledge of PABX or other telephonic or signalling systems
3. Knowledge of block structured and Assembler languages
4. Five-eight years' industrial experience for the more senior position
5. Three-five years' industrial experience for the second vacancy

The above posts are open to applicants seeking both

CONTRACT or PERMANENT

employment. Vacancies other than the above also exist within S-COM and salaries are extremely competitive typically falling into the following categories:

Up to three years' experience	£10K per annum
Three to five years' experience	£9-£13K per annum
Five+ years' experience	£12-£22K per annum

Remuneration for Freelances for the above posts is £13-£14.50 p.h. and £12-£13.50 p.h. respectively, according to experience. In addition expenses £130 p.w.e. are payable.

For further details of other vacancies, please call or write to Graham Blakoe.

FOR DETAILS OF OTHER VACANCIES IN S-COM (CONTRACT OR PERMANENT)
PLEASE CALL OR WRITE TO LAWRENCE MILLS.

Computer Systems Engineers Limited

Tower House, High Street, Aylesbury, Bucks. Tel: 0268 32023
Evenings after 7pm or weekends 0268 33059

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TECHNOLOGY

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- New product design

He will also be responsible for:

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- Supervising research and development projects
- Taking hardware developments into production
- Supervising related system software work

Please send applications, including current cv to:
Micro Technology Limited
51-53 The Pantiles
Tunbridge Wells
Kent TN2 5TE

Please send applications, including current cv to:
Micro Technology Limited
51-53 The Pantiles
Tunbridge Wells
Kent TN2 5TE

(7644)

A new era in telecommunications

Systems Software Engineer

A key role at the centre of the Mercury network from £14,000: Birmingham based

Mercury is the next force in telecommunications, carrying voice, data and image. We are building a national and international network that will be world class by the 21st century. We are expanding our operations rapidly and as part of the next phase of developing the National Control Centre, which will be based in Birmingham from mid 1984, we now require an experienced Systems Software Engineer. This is a specialised role at the centre of the network involving the operational development and application of an advanced computerised supervisory control and data acquisition system.

Other computerised telemetry systems and DEC based micro/minicomputer systems

Educated to degree standard or equivalent you must have a minimum of 5 years experience in an operating environment involving real time systems and DEC DDP11/VA/VA/Micro computers. You must have experience in software design. Familiarity with one or more of the following areas is desirable:

• Telemetry Systems • Communications Networks • Process Control

You must be able to demonstrate initiative in the application and development of operational systems and have the ability to understand and solve problems without supervision.

You will initially be based in London, although the majority of time will involve working in Wiltshire. The move to Birmingham will take place in mid 1984.

Salary is negotiable from £14,000 depending on age and experience, and could be more for an outstanding candidate. A London allowance will be paid whilst based there. Benefits include non-contributory pension and relocation assistance, where appropriate.

This is an opportunity to make a key contribution to one of the most exciting developments of the decade.

For an application form, please contact: Jeremy Webster, Personnel Officer, Technical, Mercury Communications Limited, 28/30 Theobalds Road, London WC1X 5NX. Tel: 01-404 5155 ext. 242.



Mercury
COMMUNICATIONS

(7004)

COMPUTER ENGINEER

for diagnostic software assessment.

The Telecommunications and Radar Branch REME at Malvern in Worcestershire provides advice from which the Engineering Support of Army Telecommunications, Radar and Guided Weapon equipment can be formulated. The Software Division of the Branch provides specialist software expertise to enable REME to fulfil its role in these and other electronic, mechanical and aeronautical projects.

The successful candidate will lead a small team dealing, primarily during the development and introduction into service phase, with the diagnostic software required to support the many equipment projects which do not justify a dedicated software team in their own right. The team is responsible for assessing test and ATE application software packages which will test and diagnose to component level and which include any interfaces and

supporting documentation.

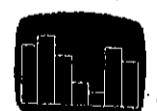
Candidates must have a degree or equivalent in electronic engineering or computer science or have a higher acceptable qualification. They must also have at least 2 years professional training or experience and should, preferably, have managerial experience. Evidence of specialist training in computing, software or microprocessors is highly desirable.

Starting salary in the range £7,175 - £9,680 according to qualifications and experience. Promotion prospects.

For further details and an application form (to be returned by 9 March 1984) write to Civil Service Commission, Alencon Link, Basingstoke, Hants, RG21 1JB, or telephone Basingstoke (0256) 68551 (answering service operates outside office hours). Please quote ref: T/6164.

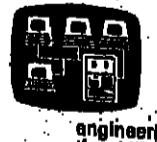
Ministry of Defence

(7028)



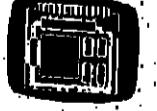
Sales Managers

Three Sales Managers are required to promote micro/WP systems for this large manufacturer. At least 10 years' DP experience, ideally in the micro/WP field, and sales management expertise in the relevant market area, will greatly interest our client.



Senior Network Controller

To work on the international network of a London based financial concern, dealing between engineering and analytical personnel on all aspects of development and support functions. Candidates should have a strong engineering background, with a good knowledge of IBM protocols and procedures. Also the ability to train staff, evaluate equipment and advise management of developments.



Engineering Supervisor

Are you a Junior Service Manager or equivalent, with drive and initiative, seeking a career within a rapidly expanding company? If you are 30+, with formal electronics training, microprocessor servicing experience, and are capable of training engineers on the test and installation of Apple products, IBM PC, DEC and Altos systems, apply now!



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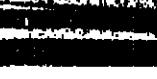
We urgently need contractors for the following:
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For further details of these and other vacancies please contact: Patricia Pollard or Christine Andrews on 01-437 1222.



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(7005)

Scientific Computing

The Daresbury Laboratory, situated in rural Cheshire, operates major national research facilities which are used by university scientists from most parts of the country and abroad.

To support these facilities the Laboratory provides computing and other services for data processing and theoretical work. There is an extensive internal and external network and the computers in use include IBM compatible, DEC, CEC, Systems and VME.

There are vacancies for people to work in:

Operational Systems

Network Support

Scientific Databases

Data Reduction and Analysis

Applicants (male or female) should have a good honours degree (or equivalent qualification) in an appropriate scientific discipline. They should also have experience in scientific computing, operating systems or scientific databases, or should have a scientific background with an aptitude and desire to move into these areas.

The appointments will be made in the grade of Scientific Officer or Higher Scientific Officer according to qualifications and experience, on a salary scale £6,682 to £7,705 or £7,149 to £9,561 per annum. There is a non-contributory superannuation scheme, generous leave allowance and a flexible working hours scheme. Some assistance with expenses for house sale and purchase may be available.

CLOSING DATE 9th March, 1984.

Further information may be obtained from K. B.

Maunders on Warrington (0225) 65000, Ext 467

Application forms may be obtained from and should be returned quoting reference number DL/84/04 to:

The Personnel Officer
Daresbury Laboratory,
SERC, Daresbury
Warrington, Cheshire.
WA4 4AD

(7086)

Daresbury
SCIENCE & ENGINEERING
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Qualifications are NOT necessary but if you HAVE acquired your UNIX experience at University then this is an ideal opportunity to join industry and build a rewarding career in your own skills and interests - with prestige and salary to match.

"C" for yourself - ring for details now!

(6601)

ab executive (kingston) ltd

59 Eden Street, Kingston-Upon-Thames, Surrey. Tel: 01-549 6441 (24hr)

Database Team Leader

National & Provincial Building Society, the sixth largest society in the country, are embarked upon an ambitious project to develop a corporate database and install a terminal network in its 337 branches. To assist in this process we are looking for a manager to join our Technical Support Group, and lead the database team in the design and implementation of this large database.

The successful applicant will have the opportunity to do considerable original design work on the new systems. Applicants should have at least 5 years DP experience with the last 3 years using a Database Management System.

Experience of database design techniques, an inquiring and innovative mind and the ability to meet exacting timescales are all essential pre-requisites. Experience of Burroughs DMS11 would be a distinct advantage.

Based in Bradford this position offers the range of benefits expected from a large responsive employer. Initial salary will be up to £12,500 depending on experience.

Please reply in the first instance to:

Mr. S. Middleton
Personnel Officer
National & Provincial Building Society
Provincial House
Bradford BD1 1NL

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Hewlett-Packard

A fast-growing D.P. Department provides the promotion opportunities

The successful manufacturing and distribution Organisation, committed to computerisation, believes the most up to date hardware deserves the most up to date applications. Their policy provides opportunities for career-minded individuals to work on sophisticated commercial developments involving communications and graphics, using a HP3000 Series 64 (to be upgraded to a Series 68 in the near future), with an extensive networking system.

Senior Programmer: c.£9,000

The ideal applicant for this position will have a minimum of 3 to 4 years' experience in the d.p. industry, of which at least 2 years will have been spent on Hewlett Packard equipment. As this is a fast moving environment, a self-motivated person is required, who looks forward to the challenge of expanding their knowledge and experience on a day-to-day basis.

AN OPPORTUNITY ALSO EXISTS for a fairly junior Programmer to enter this exciting environment, working on a HP125. Essential is a complete fluency in BASIC, a knowledge of CP/M, some commercial/manufacturing experience, and the ability to work without close supervision.

For all 3 positions, telephone your Advising Consultant, **Jim Smitham**, to arrange an early interview, on **061-833 0427** (24 Hour Answering Service) or **061-439 2879** (Evenings between 8 p.m. and 10 p.m. and Weekends). Alternatively, submit a detailed C.V. to SCR Limited, International House, 84 Deansgate, Manchester M3 3EE.

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Queensway, Birmingham B3 3JY
021-238 3781

NORTH
International House, 84 Deansgate,
Manchester M3 3EE
061-833 0427

BELGIUM
Avenue Louise 327,
Bolte 4, 1050 Brussels
010 322-840 7161/71

HOLLAND
Willemsparkweg 92,
1071 H.M. Amsterdam
010 3120-7604/7

If IBM System Software is your business... Come and work at the 'Leading Edge'

The quality of the computer services that we provide to our customers is increasingly judged on response times and ease of access to data. For these reasons we recognise the value of ensuring that our large scale multi-system IBM investment is continuously being enhanced in both hardware and software terms. Our Mainframe Systems group addresses the important areas of systems control software upon which all of our user-visible services including personal computing hinge. TWO key appointments exist within this group both of which are crucial to our further plans.

CONSULTANT SYSTEMS

SENIOR SYSTEMS

£16,000-£18,000 p.a. package

To qualify for this position you should have a number of years experience of large scale IBM system software in particular MVS and associated software. Some experience of supporting VM related communications products would be a distinct advantage, particularly CMS. You will be asked to carry out investigations that will bring you into contact with senior management throughout the company on matters relating to end-user computing. Good oral and written communication skills are fundamental requirements.

As well as the obvious benefits of working with an Organisation at the forefront of IBM technology you can look forward to an on-going programme of personal and technical development training which reflects our policy of 'job rotation' for all levels of personnel. If you want to find out more about these challenging new opportunities contact our Advising Consultant **Nick Reid** on **01-935 0671** or **01-644 1973** evenings or weekends. Alternatively submit a brief Curriculum Vitae to our London office marking this reference **NR. 101**.

Technical Sales & Management Appointments

Specialist Computer Recruitment Ltd

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James House, 46 James Street,
London W1M 5HS
01-535 0671/488 0461

MIDLANDS & INTERNATIONAL
35-37 Great Charles Street,
Queensway, Birmingham B3 3JY
021-238 3781

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International House, 84 Deansgate,
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We need graduate-calibre people with a good knowledge of commercial or technical applications to help our customers get the best out of the computer systems they buy from us. Although it would be valuable to have some experience of HP products, what we're really looking for is the ability to explore wide-ranging software applications and to create a good working dialogue on the subject with anyone from a junior operator to the MD.

We will give you excellent training for this role - at the very least, 6 weeks at Hewlett-Packard centres in the UK, France and West Germany.

Opportunities currently exist to work on our HP3000 series commercial computers, and on our HP9000 series 32-bit technical computers. Both roles will include involvement in pre-sales situations to provide expert advice and assistance to prospective customers. For the commercial roles, previous HP3000 experience would be advantageous;

for the technical roles, experience of UNIX and/or datacomms is required.

Whichever systems you support, you can anticipate rapid career development in a company which has grown by 35% in 1983 alone. Our products represent the most advanced technology in their respective markets, and future developments will keep us ahead.

If your career aims are a highly varied workload, plenty of personal contacts, quick advancement and constant technical challenge, you won't find a better opening than this.

Initial salaries would be up to £15,000 plus car and a very valuable benefits package including twice-yearly profit-sharing bonus, share-purchase scheme, discounted BUPA, and free pension and life assurance.

Either ring Wendy Owen for an application form on Wokingham (0734) 784774, or write to Judy Frank with full personal, career and salary details at Hewlett-Packard Limited, King Street Lane, Winnersh, Wokingham, Berkshire RG11 5AR.

Hewlett-Packard is an equal opportunity employer.



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Please call Richard Milum on 01-554 1055 during office hours or on 01-988 2555 during evenings and weekends. All responses will be strictly confidential.

All vacancies are permanent subject to availability.

(7681)

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To support our current networks at our Edgware centre and assist with the planned expansion of new telecommunications facilities, the Company is seeking personnel who have had several years experience of data communications and can demonstrate a working knowledge of:-

- Network operations
- Circuit installations and acceptance (PW and P.S.T.N.)
- Modem and circuit diagnostic routines
- B.S.C. protocol
- Data communications test equipment

Applicants must be prepared for shift working, at present days and evenings, for which an additional allowance will be payable. Excellent benefits are offered in addition to a competitive salary, which will include, profit sharing, over 5 weeks annual holiday, non-contributory pension and life assurance scheme, subsidised staff restaurant, Sports and Social Club, relocation assistance if necessary and house purchase scheme after qualifying period.

For further details and an application form please telephone Mrs. R. Skidders on 01-952 2333 or write to her at:

Bankers' Automated Clearing Services Limited, De Havilland Road, Edgware HA8 5QA, Middlesex.

(7681)

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01-891 0782
(even. + weekends)

(7681)

PROJECT PROGRAMMER SMALL SYSTEMS UNIT

We need an experienced Data General COBOL programmer. The applicants will be expected to have three to four years experience in Data Processing and be able to demonstrate that they have produced substantial programs in an AOS environment using an INFOS Data Base.

We are looking for someone who will play a major role in the provision of application software on Data General 16 bit and 32 bit computers using the AOS operating system and the technical support of the system software including operating system, databases, electronic office products and communications.

There will be opportunities to develop skills and knowledge on a wider range of equipment and it is essential that applicants are self-reliant and motivated to seek and assimilate quickly technical information concerning hardware, software, and techniques in general.

Salary £9,196 - £11,167 (currently under review). Based Central London. Relocation expenses considered.

For further information please contact Sue Vince, tel. 01-580 4468 Ext. 4255, quoting reference 2128/CW.

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BBC

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You will join a dynamic team involved in the development, implementation and support of a broad range of business systems for use in our UK and European operations. The Datapoint installation at our European headquarters at Hayes is one of the most advanced in the UK, with eleven processors (8800, 8600, 6000) and 400 megabytes of disc all linked using the Resource Management System and ARC network. There are 12 other sites in Europe - soon to be increased to 16 - and all are supported from Hayes: consequently some occasional overseas travel may be necessary.

To qualify for these attractive posts, you should be proficient in Datapoint programming language, with 12 months' or more Databus experience. The capacity to learn quickly and the ability to work on your own initiative are essential. Salary is negotiable around £11,500, depending upon experience, and the excellent benefits package includes profit sharing bonus, pension scheme, free BUPA and life assurance. Assistance with relocation will be given, where appropriate.

Please write with full details to:

E. M. Enon,
Director of Personnel - Europe,
Computervision Europe Inc.,
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1040 Uxbridge Road, Hayes, Middx.

(7883)

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Project Leaders

Herts: Salaries to £15K

The Systems Development Department of a U.S. based company, which specialises in Ethernet-based products, is actively recruiting Project Leaders with a thorough knowledge of software development techniques. Successful applicants will be responsible for teams of between 5 and 10 Programmers and Analysts/Programmers engaged on the design and development of an exciting new range of networking systems products. A degree and fluency in a block structured language are essential, as are good presentation and communication skills. The ability to plan and direct the development of software and hardware for the overall design of new products will form a high percentage of the job content and, therefore, respondents with such experience will be especially welcome.

Ref: L7/1A

C₃ Systems

Inner London: Salaries to £18K

The Systems Group of a major supplier of Defence and Emergency services software has a number of urgent requirements from Analyst/Programmer to Consultant level. Candidates should have at least 4 years experience in Communications, probably gained in a MOD establishment or Systems House environment, and also possess a degree, or equivalent, in a numerate subject. Ideally, applicants will have worked on systems such as Pinmigan, Wavell

Ref: L7/1B

Electronics Design Engineers

Central London: Salaries to £14K

Profile: Our client, a leading British Systems House, is seeking recruits to meet continued growth in its business in Defence and the Emergency Services. The Company has a large number of projects involving the design and production of advanced digital electronic hardware.

Current projects include:

* Interface equipment for local area network communication systems.

* Advanced signal processing hardware.

* Data acquisition and analysis systems.

Personnel: The Company is seeking several electronics design engineers with at least one year's experience of digital circuit design. Candidates should have the ability and motivation to take on team leadership responsibility, and experience of, or an aptitude for, proposal preparation. The Company seeks some recruits who have moved on to successful project management after several years experience in digital circuit design. Applicants should have a degree or equivalent qualification. Experience of one of the following would be an advantage:

* data acquisition and analysis hardware

* special architecture computers

* embedded microprocessor systems

* advanced communications and networked systems.

Rewards: In return for your personal commitment and technical skills the company offers an excellent salary together with an outstanding range of ancillary benefits.

Applications: Please submit a well documented resume or alternatively telephone one of our consultants quoting Ref: IJS/11.

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£12,000

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Good MVS background with sound JCL. Management experience or potential is a distinct advantage. Relocation package available if necessary.

SNR OPS/OPERATORS IBM MVS to £10,000

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SNR OPS/OPERATORS IBM DOS £8,500

A number of positions available for DOS/VSE Operators ranging from six months' experience upwards. Many of the jobs carry good benefits and prospects. Various locations.

OPERATOR BURROUGHS £8,000 + MORT

Experience using Burroughs medium sized systems. Very high personal standards required. Two shifts.

OPERATOR UNIVAC £7,000

Any Univac experience preferably using OS3. Good prospects. Two shifts. Bonus.

OPERATORS DEC £10,000

Two large DEC sites require Operators with VAX/VMS experience. Possibilities of progressing into programming/software.

OPERATOR HONEYWELL to £8,000

Experienced Operator with a minimum of one year's GCOS3 or 8. Ability to work without supervision. Good prospects.

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ELECTRICITY

Computer based electricity distribution, monitoring, and control systems, automatic network control and remote control of electricity generation.

GAS

Control and monitoring of natural gas schemes, offshore platforms, distribution networks and gas pipelines.

WATER

Computer based control and monitoring systems for water distribution and effluent disposal.

OIL

Pipeline control and monitoring systems and remote control of gas turbine pumping stations.

Computer People
The Market Leaders

REAL-TIME SOFTWARE OPPORTUNITIES
EAST MIDLANDS
Salaries £8000 - £13000+
Plus relocation

Our Client is the leading manufacturer of power automation products and telecontrol equipment and systems. Their Systems Software Department now wish to recruit a number of high calibre personnel with real-time mini computer systems experience.

Technical Support Analyst

We would like to hear from candidates who have:
 * a degree in engineering or computer science
 * approximately 8 years software experience in real-time mini-computer applications including some involvement with telecontrol
 * good communication skills with the ability to understand system capabilities and user requirements.

TELECONTROL SYSTEMS

Senior Programmers/Programmers

For these positions we would be interested in candidates with the following skills:

- * a degree in engineering/computer science
- * a minimum of 2 years programming experience is essential with a high level language background - preferably CORAL 66
- * some customer interface experience is desirable for the senior positions

The Company is situated in an attractive East Midlands location where housing costs are very reasonable. Naturally, a generous relocation package will be offered where appropriate and terms and conditions of employment are excellent. If you feel that you have the necessary qualities to succeed in these challenging roles contact our advising consultant Rod Beeson on 021 643 8501 (business hours) or 021 777 8743 (evenings/weekends) or simply complete and return the FREEPOST coupon.

Name.....
Address.....
Tel (day)..... (evenings/weekends).....

• 01 500 4211 Computer People London, 101 House, 88 St Martin's Lane, London WC2N 4JS • 01 800 4011 Computer People South, 27 George Street, Croydon CR9 1HQ
 • 012 621 8509 Computer People Midland, 8th Floor, Birmingham B1 1HT • 01 391 1666 Computer People North, Sopwith House, Stockport Road, Cheshire SK8 2EA • 01 836 5111 Computer People International, 101 House, 88 St Martin's Lane, London WC2N 4JS
 • 01 820 3482 Computer People West, 88 St Martin's Lane, London WC2N 4JS • 21 422 1311 Computer People Asia, 10th Floor, 1000 Avenue of the Americas, New York, NY 10019 • also offices in New York, Kennedy and Los Angeles

The Market Leaders

YOUNG GRADUATE SOFTWARE ENGINEERS AVIONICS PROJECTS

Rural Location

to £11,000 p.a.

This is a superb opportunity for young, enthusiastic engineers with Real-Time software experience to join a highly successful British company currently developing an exciting range of high technology products.

Ideally, you will have experience of CORAL, PASCAL, INTEL 8086 ASSEMBLER gained in an avionics or other Real-Time environment; but any Real-Time microprocessor experience, especially utilising PDP11s, would be useful. Successful applicants will form an in-company "software house" assuring variety of projects and first-class training.

The salaries are excellent and the attractive benefits include full relocation, subsidised restaurant and pension schemes including free life assurance. Five weeks' holiday, optional overtime and flexible working hours complete the package.

With the rural location, a choice of village or town properties at sensible prices is available and, for "outdoor" types, a wide variety of water and field sports are at hand.

To further your career and enhance your lifestyle, telephone Beverley Leonard on Bristol (0272) 277195, or send a full curriculum vitae to:

3 Marsh Street
Bristol BS1 1RT

ro
The Recruitment Partnership

Technical Support VME/B SCL
THAMES DITTON, SURREY

The Milk Marketing Board is the dairy farmers' organisation of England and Wales. We employ around 13,500 staff and operate a substantial range of services and commercial enterprises with an annual turnover of nearly £2,400 million.

As the leader of the SCL Team - Technical Support - you will be responsible for the implementation and support of all VME/B based production systems. The work includes organising the team, providing advice on the use of facilities in new systems and assuring their operational acceptability.

Probably in your 20s, you will have a good working knowledge of SCL and experience of organising and motivating others. A background in COBOL would be an advantage.

We offer an attractive salary depending on age and experience and excellent company benefits. Include a subsidised restaurant and thriving sports and social club on site.

Please send full career and salary details quoting ref FY/049 to:
Carol Carter, Personnel Officer
Milk Marketing Board
Thames Ditton, Surrey KT7 0EL
Tel: 01-398 4101 ext 2263

MMB

COMPUTER SERVICES MANAGER

Read Stenhouse Management Services Ltd, is a successful division of the International Read Stenhouse Group, one of the world's leading insurance Broking Companies. We currently use Honeywell DPS7 equipment with TOTAL DBMS, in our Glasgow office, and Honeywell DPS6 equipment in various locations throughout the UK. Following promotion of the present holder of this position to Computer Services Director, we now require to fill this post.

The prime responsibility of this position will be to manage the day-to-day operation of all computer hardware and software within the UK Group and to manage the 30 staff employed in the department in Glasgow.

Ideally, candidates will have at least 10 years' relevant experience in DP, the major part of which should have been spent in the Operations and Technical Support areas at a senior level.

This is a senior management appointment and the salary, which is negotiable, will reflect our regard for the importance of the job and the capability of the person appointed.

REED STENHOUSE

Applications in writing, with full C.V. to:
The Company Secretary
Read Stenhouse Management Services Ltd,
185 St. Vincent Street, Glasgow G2 6NX.

MVS Systems Programmer

London

c. £2700/month

As part of their ambitious development plans our Client is opening a new Data Centre to house dual IBM 3083's. We require an experienced Systems Programmer to be responsible for the implementation of MVS/SP 1.3 and JES2 on the first 3083, and for maintenance and tailoring of MVS as a CICS/VTAM based network expands. The successful applicant must have a good understanding of MVS, whilst knowledge of VTAM would be useful, and the assignment is initially for 6 months.

T073

ADABAS/NATURAL Specialists

Holland

c. £2600/month

As part of a program to significantly expand the use of ADABAS and Natural our Client has established a central support group. We are seeking two experienced ADABAS specialists to join the group - one with a background in application design and development to provide a consultative service to divisions throughout the organisation and the second with a good technical appreciation of ADABAS/NATURAL to work on system implementation and the development of interfaces and end user facilities. Although based in Holland, there will be a requirement to undertake short trips throughout Europe. The assignment period will be open-ended with an initial commitment of 6-12 months.

B074

Software Programming

Belgium

c. £2500/month

We require an experienced Software Programmer to undertake a three to six month assignment assisting our Client with the conversion of a database system by developing VM/CMS Execs and writing BAL migration tools. A good knowledge of Assembler and CMS is essential whilst familiarity with Data Dictionary techniques and DOS/VSE would be advantageous.

L075

MVS & IMS Systems Programmers

Scotland

c. £3000/month

As a result of our Client establishing a new multi-cpu Data Centre we are seeking two experienced Systems Programmers - one to support MVS/SP 1.3 with JES2 and the second to support IMS DB/DC Rel. 1.2. In both cases duties will involve generation, maintenance, performance tuning and debugging and candidates should have a minimum of two years relevant experience - both assignments are open-ended with an initial commitment of six months starting in April/May.

J075

IMS Systems Programmer

S.E. England

to £3000/month

We are seeking an experienced IMS Systems Programmer to work at our Client's large multi-CPU Data Centre, where there are plans to install DBRC in the near future and to migrate to MVS/XA around the middle of the year. The successful candidate would be involved in these projects as well as general support and maintenance of a large IMS Rel. 1.2 system, which is undergoing a considerable expansion during the course of the year. The assignment will be on a renewable 6 monthly basis and applicants should possess a minimum of 4 years relevant experience and will preferably have some prior knowledge of DBRC.

J077

MVS Systems Programmer

Home Counties

c. £2750/month

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Sixteen years ago, Data General burst upon the computer world as a fully fledged major innovating company with the Nova minicomputer. It was way ahead of the competition and being one step ahead has been the Data General philosophy ever since. A steady stream of exciting new products followed which were reflected in a massive

increase in sales and a consistent and dramatic record of planned growth. 1983 again saw Data General in the forefront of new computer developments. In the Spring, we launched the MV/10000, the world's most powerful 32-bit minicomputer. For performance/price, reliability and compatibility, it is unbeatable. We followed this in the

Autumn with our new generation of desktop microcomputers with minicomputer performance and stand-alone or on-line capability.

And in 1984, there's more to come in both hardware and software.

WHERE DATA GENERAL LEADS,

1968

- First company to offer a 16-bit minicomputer using medium-scale integration and incorporating multiple accumulators in the central processor.

1975

- First minicomputer company to offer a stand-alone, asynchronous input-output processor as part of a standard product.

1969

- First company to offer 15-inch circuit boards, now standard in the industry.

1972

- First 16-bit minicomputer CPU on a single printed circuit board.

1973

- First minicomputer company to establish its own semiconductor development and manufacturing facility.

1974

- First minicomputer company to offer error-correcting memories.

OTHERS FOLLOW.

Please fill in the coupon for more information (attach your business card and/or attach your c.v. if you prefer). Send the coupon to: John Gunnell, Personnel Manager, Data General Limited, Hounslow House, 724-734 London Road, Hounslow, Middlesex.

I am interested in finding out how my career would benefit with Data General.

NAME

ADDRESS

HOME/BUSINESS TEL. NO.

The new MV/10000 is the most powerful computer in Data General's Eclipse family. It is the fastest and best price/performance virtual memory 32-bit computer on the market.

My experience is in: (tick box & indicate years of experience)

Mini/Mainframe Sales

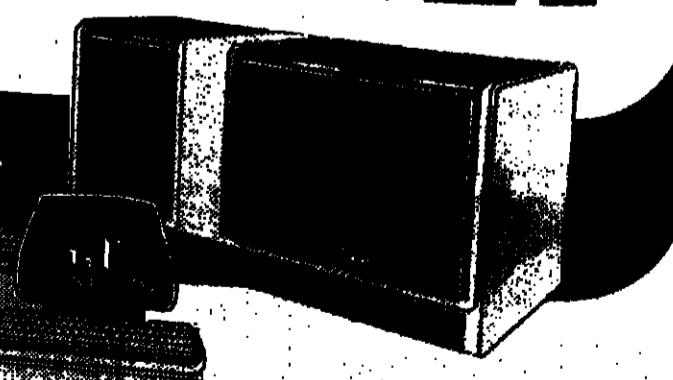
Software Support

Field Service Engineering

Other (please specify)

My current employer is

I have previously worked for



• Data General
a Generation ahead

Don't you owe it to yourself as a professional DP person to find out more about Data General, the most innovative and fastest-growing computer company today?

Right now we're looking for several of the most talented people in the industry. And we mean talented. To qualify you'll need to have serious career commitment and real achievement behind you. We currently need Sales Executives, Software Support and Service Engineers but we are also keen to hear from computer professionals in other disciplines who have the ambition to share in the success of a genuine industry leader — Data General.

1980

- First public packet switching networking product, XODIAC software, for minicomputers based on the X 25 international standard.

1981

- First minicomputer company to offer IBM SNA compatibility

1983

- First company to offer the world's most powerful virtual memory 32-bit minicomputer
- First company to produce new generation microcomputers with minicomputer performance

1984

- First, and the years to follow will bring other industry firsts, but in the present Data General has the competitive edge to supply cost effective solutions to the Industrial Automation, Office Automation and Desktop marketplaces
- Unrivalled compatibility of software throughout the product range ensures protection of the customer's original valuable investment. From the low-end Desktop Generation to the top of the range ECLIPSE MV/10000, Data General has the advanced technology to provide its customers with industry leading cost-effective solutions.

An ideal opportunity for SOFTWARE/HARDWARE ENGINEERS to move into TECHNICAL SALES SUPPORT

Up to £15,000 + 2 litre car

Graphics systems have come a long way since drawings first came off the drawing board and into the computer. The latest colour graphics systems show a degree of sophistication and versatility that make them equally at home in an up front defence environment or in a fashion house.

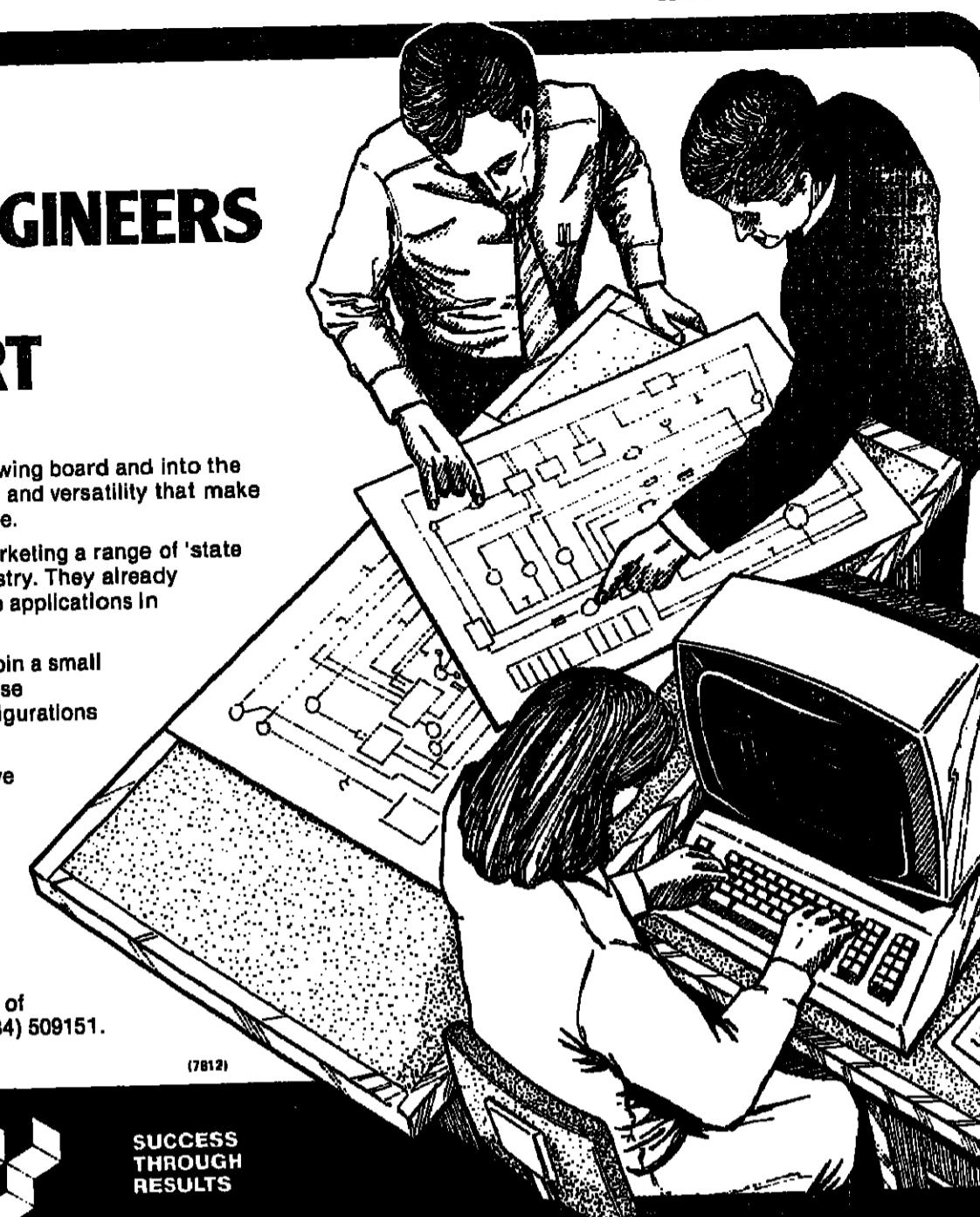
Our client is part of a major international organisation, manufacturing and marketing a range of 'state of the art' plotting and graphics systems for use in all aspects of modern industry. They already hold a large share of the market and wish to further expand their already wide applications in an under-exploited market place.

This is where you come in. We are seeking two self motivated individuals to join a small sales support team involved in all pre-sales activities. Your role will be to advise customers on the various software applications packages and hardware configurations as well as carry out demonstrations, training and running benchmarks.

These are key positions and successful candidates are likely to have extensive experience with DEC or IBM systems and may have some knowledge of remote or graphics applications. Communications skills are also extremely important because of the high level of customer contact.

The company is based in Berkshire and full product training will be given in the UK and California. Conditions of service are excellent and reflect those of a large international company including medical, bonus and pension scheme.

If you think you have the skills and initiative to join our client at the frontiers of graphics and plotting systems applications, contact Val Abl on Reading (0734) 509151.



Kirby Professional

Kirby Professional Recruitment Limited 24-26 Queens Road, Reading, Berks. RG14AU Telephone: Reading (0734) 509151



SUCCESS
THROUGH
RESULTS

LANCASHIRE & YORKSHIRE COMMERCIAL PROGRAMMERS DEC-IBM-DATAPORT-ICL

Permanent or contract
Opportunities for other disciplines. Contact:

David Hartley
Fraser Williams Ltd.
Enterprise House
18-20 Paul's Street
Leeds LS1 2AE
0113 244927

Ken Grimley
Fraser Williams Ltd.
Enterprise House
18-20 Paul's Street
Leeds LS1 2AE
0113 244927

Fraser Williams Computer Services

LIVERPOOL ST ALBANS LONDON LEEDS MANCHESTER POKYON BIRMINGHAM
BIRSTOL SHEFFIELD GLASGOW ABERDEEN TORONTO [7858]

ti INNOVATIVE BUSINESS SYSTEMS ANALYST

Technical Indexes is a rapidly expanding company within an international group and specialises in the distribution of a wide variety of micro and minicomputer-based business systems that provide essential technical data to engineers, designers and business managers. We are now ready to use the system for the development of a new business area. To assist us, we wish to recruit an experienced Business Systems Analyst to make the following requirements:

At least 5 years experience in business systems analysis.

Some computer programming experience.

Professional attitude.

Product experience.

We are particularly anxious to find someone who is not steeped in the traditions of conventional analysis, specification, design, coding, etc.

We intend to pass straight from analysis to implementation using the ADMINS systems development methodology. ADMINS is not essential but would be an advantage.

If you are interested in this opportunity, please contact Mr. D. S. Wright, Director of Technology Development, Technical Indexes Limited, Willoughby Road, Birkdale, Liverpool L12 4DN. [7852]

OPPORTUNITIES IN USA

Circuit Test - MS/LSI Logic, ATE

Computer Programmers - PDP 11, VAX/VMS

Systems Managers - VAX 11/780, VAX 11/780

Software Development - MC68000 system

Electrical Design - Power Distribution ac, dc

Digital/Analogue Design - EMI Investigations

Shock/Vibration Analysis - IFEM/ANSYS

Please forward detailed résumé to:
SAC Technology Group Ltd, Brunswick House, Upper York Street,
Bristol BS2 8CB.

We have recently completed a Systems Planning exercise in support of the Group's ambitious business plan. Our strategy requires the implementation of new real-time transaction processing and office automation services throughout the Group by the end of 1986, based on a policy of distributed mini and micro processors.

These new systems will be developed using PROMPT project management and YOURDON - based structured analysis and design methods, to which management is fully committed. We require someone, probably currently at Senior Analyst or Project Leader level with experience in using similar methods, to oversee the implementation of these standards and to direct the training of departmental staff. It is expected that success in this position will lead to a more senior project management role.

STANDARDS AND TRAINING

c. £15,000

Stewart Wrightson

International Insurance Brokers

This position, which includes attractive additional benefits, offers excellent career prospects within a young, progressive development environment. For further information contact Mike Kelly, Systems Development Manager, on 01-623 7611 or write to him, enclosing a current c.v., to Stewart Wrightson, 1 Camomile Street, London EC8A 7HJ.

PL/I ALL LEVELS!

To £12,000
We have numerous clients in London and the home counties who require experienced PL/I PL2 Programmers from Programmers to Senior Programmers. The minimum requirement for Programmers is 12 months' PL/I experience and for Analyst/Programmers proven analytical skills. The company offers from small software houses to large multi-national and offer a wide variety of projects and benefits. G.W/4286

12 MONTHS' IBM COBOL?
SURREY To £9,000

An opportunity has arisen for a programmer with a minimum of 12 months' experience to join this leading financial group based in the heart of Surrey. The company have recently installed the latest version of the popular DOS/VSE. You will be part of a small team developing on-line database systems. Your CICS and VMS experience would be an added advantage although training will be an aid. The position carries benefits normally associated with a large leading company. G.W/4285

RPG III/FINANCE
CITY £10,12K

Continued PL/I Programmer and the upgrade from IBM System 31 to System 38 has created a new PL/I Programmer/Analyst. This is an expanding department therefore the candidate appointed can expect rapid progression. Working conditions are includes subsidised meals, yearly bonus and restaurant facilities. To discuss this position further please contact me as soon as possible. G.W/4288

MOVE INTO MANAGEMENT
CENTRAL LONDON To £14,000

This is an ideal opportunity for a competent Analyst/Programmer to move into a management position with the main emphasis of the job will be the implementation of new systems. The requirements for this position are three years' programming, design and maintenance experience plus RPG II with indepth knowledge of the IBM System 38. If you feel confident about meeting this position then phone immediately for further details. G.W/4281

HEWLETT PACKARD - COBOL

£10,500 + Relocation
My client based in Herts is a leading manufacturer of scientific products in the UK. They run a network of 100+ computers and are currently embarking upon the development of local systems. These will include stock control, ledgers, distribution, etc. They COBOL experience and a knowledge of the HP3000 + machines. There will be much scope for user consultation, a profit share scheme, non-contributory pension, sports and social club, and relocation assistance. H.W/4283

PICK ALL LEVELS

To £14,000
Presently I have several excellent openings within London and the Home Counties for individuals whose experience is gained largely or exclusively on tick-based software, insurance policies, software packages, household names and many other software packages. There is a real challenge in this work, interesting, challenging and stable career openings to the relevant backgrounds. If you are looking for a new opportunity call now for a confidential discussion and send a current c.v. to the address below. MW/4282

UNIX

CITY £12,500
My client, part of an international banking group, require an experienced programmer for their D.P. operations team. This will be a challenging appointment with an organisation dedicated to making the best use of their sophisticated programming facilities. A thorough knowledge of Unix is essential on any machine and experience in a financial environment would be an asset. All banking details apply. MW/4286

DATAPOINT
BERKSHIRE £9,000

As part of their continued expansion this international organisation would be interested in receiving applications from programmers with at least 18 months' experience in Database. The company can offer secure working conditions and the right candidates. Possibility of travel within UK and abroad if desired. MW/4284

MICRO PROGRAMMER/
ANALYST

SURREY £12,500

Excellent opportunity to join this well-established software house in the centre of their micro development plant. The candidate will be prepared to play a major role in the software development having worked in a micro environment for a minimum of 18 months with a thorough knowledge of CP/M systems and Disk II. In return the company can offer an excellent career path and 1st class benefits. MW/4288

HEWLETT PACKARD - SENIOR
SALARY £14,000

Do you have five years' + D.P. experience, combined with at least one year's involvement in HP3000 machines? My client can offer you a similar position within their close knit and highly successful D.P. department. The appointed candidate will be given the task with senior management and will have responsibility for major development projects. The company uses the latest P.C. technology and IP utilities and are dedicated to computerisation. It is envisaged that the post will lead to promotion within management within a year. I also have similar posts in Berkshire, West London, Hertfordshire and Scotland. H.W/4087

12 MONTHS' IBM COBOL?
SURREY To £9,000

An opportunity has arisen for a programmer with a minimum of 12 months' experience to join this leading financial group based in the heart of Surrey. The company have recently installed the latest version of the popular DOS/VSE. You will be part of a small team developing on-line database systems. Your CICS and VMS experience would be an added advantage although training will be an aid. The position carries benefits normally associated with a large leading company. G.W/4285

ICL 2900 COBOL
PROGRAMMERS

MIDDLESEX £8,500 to £10,500

A number of interesting opportunities have arisen for experienced commercial programmers to join the one of the most successful in the export business. They utilise ICL 2900 kits running under VME. The senior position is open to a manager who must also have supervisory experience. Both positions require a knowledge of structures. If you have a dynamic and progressive personality and are looking to develop your skills, this position will be of great interest to you. G.W/4282

ICL PROGRAMMERS

RURAL SOUTH £7,000-£11,000

More and more companies are moving to the Silicon Valley of the South due to expansion. At the moment I have two contracts recruiting a number of programmers at most levels. The senior position requires 18 months' good COBOL experience in an ICL environment and they offer training to obtain application skills. The more senior position requires a knowledge of VMS/B and on-line projects. In return both companies offer an excellent career path and all large company benefits. G.W/4282

MVS/COBOL

CITY £12,000

Leading financial concern in the city has recently embarked on a new venture that will require the setting up of a new team. Two years + IBM OS or MVS COBOL experience, whilst CICS would be advantageous. Training can be provided in DL/I, and structured programming techniques, and there will be every opportunity to strengthen your analysis. They also look for IBM COBOL programmers with one-two years' experience. Training can be provided in CICS and database techniques. A.W/4194

IBM SYSTEM 38

MIDDLESEX £11,000

Three clients in the engineering, manufacturing and retail trades are seeking programmers/analysts to join their development teams. 12 months' IBM System 38/39 experience is required, although candidates with two years + RIM would be favourably considered for retraining. If you would like more involvement, and a better salary please contact me now. G.W/4206

HONEYWELL SENIOR

£12,000

A company who are a major name in the field of D.P. and graphic equipment, are expanding their D.P. department and are looking to recruit an additional member to lead a small team. They utilise a Honeywell 1600/1800 with COBOL. Experience of designing and implementing at least one major project from concept to completion is required along with good communication skills. They offer normal large company benefits and relocation expenses where applicable. A.W/4194

ICL ANALYST/PROGRAMMER
FOR THE SOUTH WEST

£11,000

The company are involved in several exciting new development projects and require a number of talented professionals to complement their three year's RPG II experience and a financial/accouting background. The projects are interesting and involved, and will be a mixture of development and support work in a small team environment. A.W/4289

PDP - VAX - RETRAIN!!

To £12,500

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The Company

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The Requirement

Candidates will probably be in the age range 25-40 and should be able to demonstrate a background of successful systems implementation. The ability to communicate effectively with end users is essential as is the strength of character to control systems development projects. Experience of underwriting activities and technical d.p. experience would be desirable, although the client would consider candidates with alternative backgrounds.

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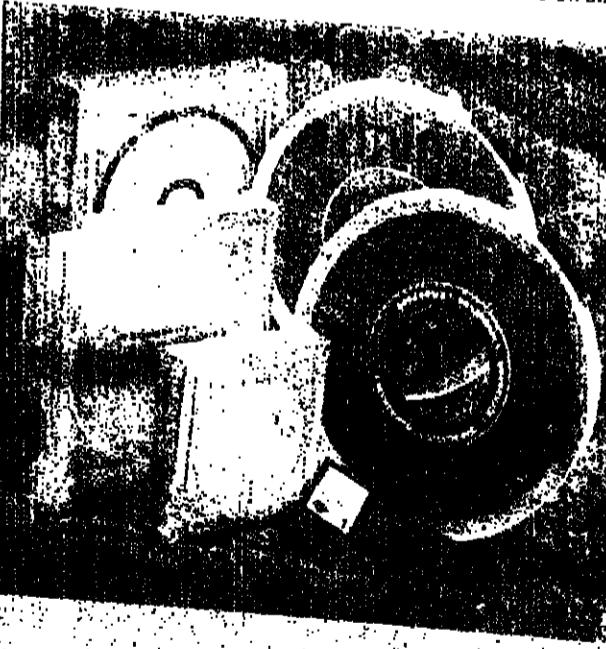
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The Systems Development Department requires a highly experienced technician with substantial VAX COBOL knowledge to guide the structural design of banking application systems; and to provide general technical support to the bank's programmers. User-related experience of VMS with COBOL is mandatory and banking application knowledge would be helpful.

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Please write with full details to: Angela Callan, Credit Suisse First Boston Ltd., 22 Bishopsgate, London EC2

CSFB

SALES BIT Quality of Management-83

How to survive in the jungle of high technology

FORGIVE me if I appear to be rambling on about product knowledge—but I don't apologise for it! It's a subject I feel strongly about and, as I suggested last week, the proportion of salespeople who are out in the world selling high technology products and armed with nothing more than superficial knowledge, is probably higher in the computer industry than in any other.

The reasons are fairly obvious: the introduction of new hardware and software is virtually a daily event within the industry at large. The rate of technological advancement seems to increase at an exponential rate as the unit price appears to decline in adverse proportion.

There is so much new information to be absorbed that it is difficult to keep up with it all. For example, in 1982 alone Data General introduced 27 new products into the UK. So their salespeople

in other words, they don't know what they are talking about! They know their products in three different models, 64, 128K memory, main pic, fixed or floppy discs, without accounting, word processor, space-invaders, computers and direct access to top secret files at HQ, and that it is not used when there's no time in the month, but that's not enough.

The salesman must know product inside-out, backwards and sideways. He must reach the level of understanding where no one can ever ask a question to which he does not have an answer (not just an answer, know immediately where it is); seldom a sales objection which he does not have the right to rebuttal. After all, an objection is seldom anything more than a request for information.

He must be constantly hungry for detailed information

Some may, through strength of character, be able to pull themselves up by their own bootstraps; but many will not

were obliged to get involved in a lot of learning in order to sell their products effectively. This demanded considerable commitment on the part of both the company and the salesforce; but they had

he will go to any lengths to get it. He must live the product. But above all, he must remember that product training is a continuing process, that no one knows everything about anything.

This is an attitude of mind that cannot be left to the natural inclination of the individual salesperson. An essential element of product training is promoting the importance and value of the continuous learning process, and responsibility for this firmly lies upon the sales manager.

For salespeople who have just entered the computer industry, there is the problem of not only learning about new products, but all the established ones too. This is difficult, but it is a problem that can be handled with dedication and application on the part of company and salesmen alike.

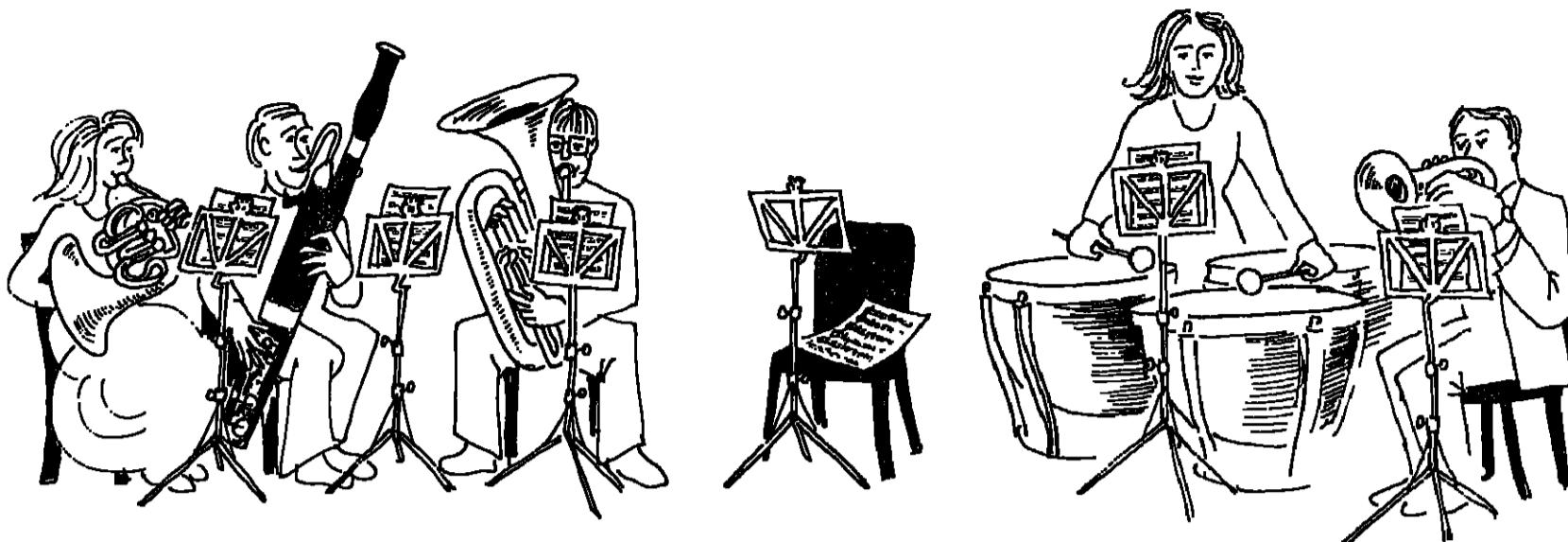
For many, what is said to be training really means that the new recruit spends a couple of weeks or so with established sales and technical people, collects an armful of brochures and manuals, then he's on his own.

Without comprehensive product knowledge, he cannot adequately enter the negotiation process without resorting to deception— as we all know where that leads to.

Alan Williams

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9	9	
4	9	
4	9	4
8	9	
8	9	1
3	9	1
3	9	4
7	9	
7	5	4
9	5	2



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The successful applicant will be an active part of this group and will have overall responsibility for estimating software development costs and for ensuring that schedules are met.

In addition to a very positive and enthusiastic outlook he or she will ideally possess some combination of the following experience and personal qualities:

- Minimum of 3 years software development.
- Previous team or project supervision.
- Knowledge of technical applications within Computer Aided Engineering.
- Converse with structured software techniques.
- Good programming and systems analysis skills.
- A broadly based knowledge of applications and systems software including FORTRAN and assembly.

* Experience of mini-computers such as DEC and PRIME.

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